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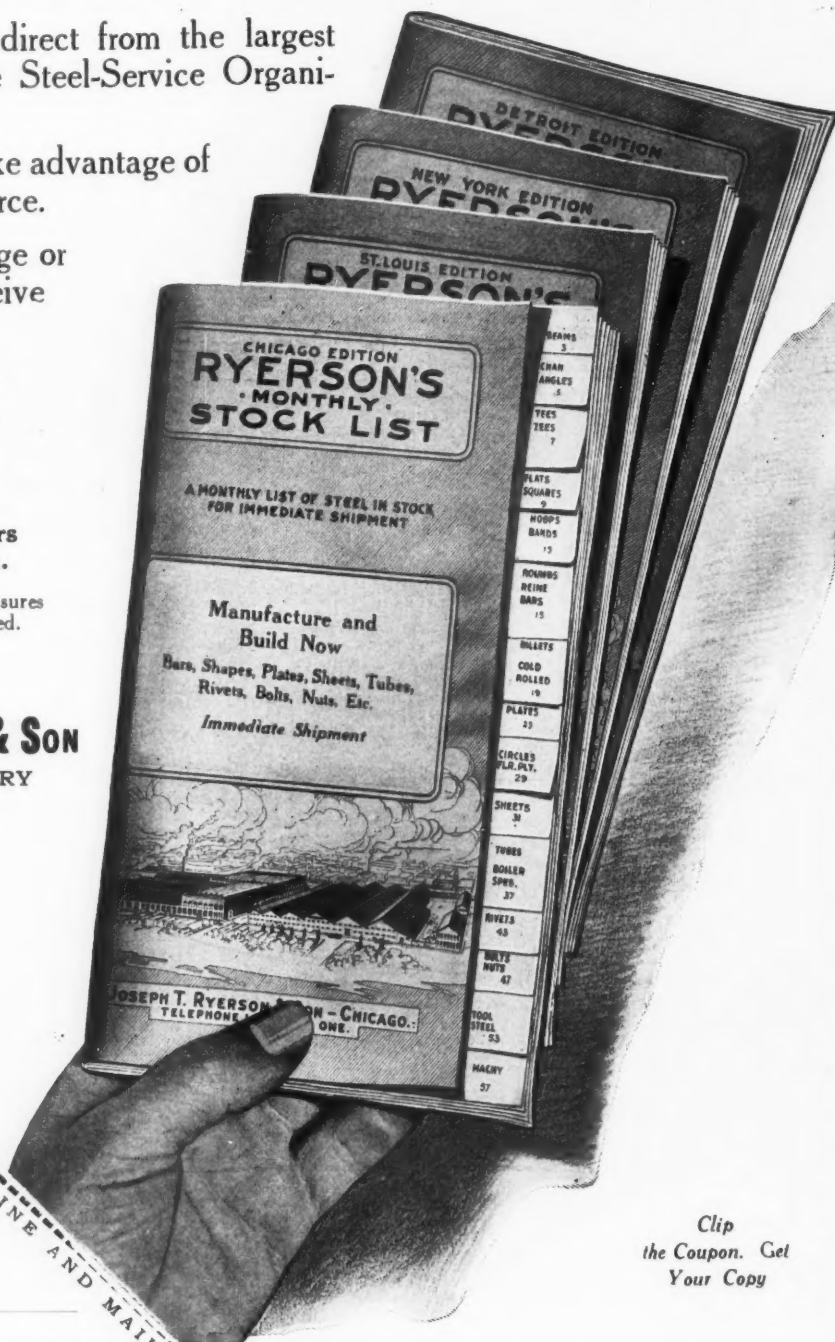
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Short Talks by the Editor



Architects Coming Into Their Own

IT was not so many years ago that an architect was pictured in the minds of most people as a visionary chap who designed freak buildings for the rich. Consequently, the man who wanted to build an ordinary building fought shy of him. But



The Old-Time Architect.

times have changed. The architect now is employed to design a great majority of the buildings erected.

An architect is a building specialist. He gathers from all sources of knowledge about building, and applies that knowledge to the needs of the prospective builder. He knows that certain things are necessary to produce a building that will be what the owner wants for his use. His plans point the way for the contractor and the workmen on the job.

Thru experience—his own and that of others—the architect knows how to accomplish certain things in the most economical and efficient way. His employment by the prospective builder is an insurance against mistakes, and thru his co-operation contractors and workmen get valuable information on every new building job they do.



What the Farmers Are Building

AN example of the class of homes farmers in the corn belt are building is shown in the Blue Print section of this issue. It is an extraordinarily fine looking home, and one that contractors would have said several years ago farmers would not be interested in. But times have changed in the building business, and now high-class homes are the rule rather than the exception. Not alone is this true with farm homes, but with every other building the farm requires. Farmers realize that good homes



are the least expensive, when the comfort and convenience that comes with them are considered. They also know that weather-tight, well-constructed barns,

granaries, hog houses and machinery sheds pay big dividends. And they have the money to buy such buildings.

Talking cheap buildings to farmers nowadays is poor business policy, because they want good buildings, and will put them up.



Lumber Prices and Costs

“A BUSHEL of corn or wheat will buy more lumber now than before the war, as will also a bale of cotton or a razor-back hog,” says W. B. Roper, secretary-treasurer of the North Carolina Pine Association, speaking of present lumber prices and emphasizing the necessity of considering values relatively.



The Bushel Has Grown

“The farmers, therefore,” he adds, “and the producers of other commodities should not complain of the price of lumber. It is true that prices are higher than they were three years ago and that a dollar will not buy so much lumber

as it then would, but it is also true that the lumberman's dollar has less purchasing value and in order to keep his mill running he is constantly buying large quantities of supplies and paying a higher price than formerly.”

Labor represents about two-thirds of the actual cost of producing lumber. Ordinary labor is getting twice as much as before the war but a “still greater reason for the high cost of lumber is the letdown in effort, the inefficiency of labor resulting in a severe curtailment of production. Notwithstanding increased wages men are now doing in the same working time about one-third less work than before.”

Mr. Roper calls attention to the fact that the overhead expense continues practically the same with an output of, for instance, 60 per cent below normal, so that the average cost of making lumber is excessive. Increased production will reduce cost and increase supply and until this is brought about Mr. Roper sees no possibility of materially lower prices.



THE Correspondence Department of the AMERICAN BUILDER is a free clearing house of ideas. It is conducted for the AMERICAN BUILDER readers, all of whom are invited to use it.

English Tool Manufacturers Think They Can't Compete with American

By WM. A. RADFORD, Jr.

ON FOREIGN TRADE MISSION AROUND THE WORLD IN THE INTERESTS OF AMERICAN BUILDER

EDITOR'S NOTE—This is the first of a series of letters from abroad by Mr. Radford on the foreign situation and world trade conditions of interest to the American building industry. This report gives his first impressions of England and Scotland. The next will come from France.

London, England, September 1, 1919.—I have been in old England just a month today. Am finally getting the run of things. Can get around now without being totally lost, and take the different buses like an old Londoner.

It is rumored that this is the biggest city in the world. I believe it. It certainly is full of people. I think I secured the only vacant room there was in the whole city of London. To give you an idea of how crowded it is, the Alien Officer at Liverpool told me I couldn't stay long in this country, but to transact my business with all the speed possible, and get out.

But at that, they are treating me pretty decent, and I am staying for a while yet.

Prices are way up out of sight here. Six dollars a day for my little room, railroad fare 5c a mile, and a square meal \$4.00.

I don't know how much further on my trip around the world I am going to get. None of the steamship offices give me much encouragement about getting farther than the Continent. I can make France and Belgium all right; but to South Africa or Australia, they are still shipping home troops, and besides have a waiting list that will easily take three months.

However, I am going to get thru and get all the information that is to be had for the AMERICAN BUILDER readers and advertisers.

I have been informed three times now that it will take me from one to three years to make my trip around the world.

I am here strictly on business—that is all that can be done in the present upset state of affairs. I am not taking any time off for sight-seeing, tho there is one wonderful piece of architecture I inspected a few days ago, which all of our builder friends would enjoy seeing—Hampton Court Palace, where Henry VIII lived.



As We Go To Press, Mr. Radford Cables Us from Paris. His Report on Reconstruction in France Will Be Presented in November American Builder.

Besides the building itself, there are some magnificent paintings and tapestries on exhibit. In the garden is quite a curiosity, the biggest and oldest grape vine in the world. It was planted in 1768, and the main stem measures 5 feet around at the base. Also blew myself to a big dinner that evening at the Mitre Hotel. I weighed 8 stone 9 pounds that morning, and 9 stone at night.

Scotland, so far, has developed more of interest to me scenically than in a business way. I arrived in Glasgow on a Sunday morning; and it sure was quiet! The trip up was thru some of the most beautiful country you ever saw. Rolling country with green fields cut up by darker green hedges; and sheep, cattle and horses grazing and

looking mighty well satisfied with their lot. The farm houses are all built of stone and, as a rule, they are in a little hollow, with the buildings almost on top of one another. The entire group is very often surrounded by a stone wall.

The buildings are certainly well kept and orderly looking and as peaceful as one could imagine. At home we have a tendency toward scattering our buildings, but here they arrange them in a compact manner and they have the air of always being "picked up" as tho for show. Everything has its place and is kept there. Here's a peculiarity of the house, one side is not as high as the other, that is, they seem to build going up a hill, which gives the house the appearance of climbing up part way, getting tired and sticking there.

Business prospects in both England and Scotland are good. In talking with purchasing agents, sales managers, and advertising managers over here, I find the impression very general that manufacturing production costs in England are much greater than with us in America. Even the edged tool manufacturers have this belief, and they will not attempt to export anything to try to compete in our market.

However, there is a great opportunity here for our manufacturers if they will come in and work for the business in the right way. Now is the chance of a lifetime, but be careful and put the right man on the job. Don't wave the American flag, but send your best men.

HOME FINANCING SOLVED



TO BUILD A HOME requires money.

Thousands would like to build, but have never gotten enough together to make the start.

It's that first "down payment" that balks them.

If that were in hand the rest of the home building and buying project would be easy; since the regular financing machinery of mortgage loans and easy payments over a period of years would then come into play.

But it's getting together that first payment that proves the stumbling block. It has upset the hopes of thousands. For the lack of the few hundred dollars to make a start, thousands continue to drudge along in rented houses—paying more and yet enjoying none of the advantages of home owning.

And The Building Industry Suffers

No one knows better than American Builder readers what these abandoned home building plans mean, (1) in loss of revenue to the building industry; (2) in loss to the general development of the community; (3) in loss of real happiness and satisfaction to the individual.

The Answer At Hand

The great problem as the American Builder

sees it, is not how to raise the full amount required to buy and fully pay for a modern, well-equipped home. No. It's how to raise that first customary percentage for the down payment.

That simplifies the problem.

And the answer is close at hand. It's an easy answer and workable—as proved every year by the Christmas Savings Clubs, and last year by the record breaking sales of Liberty Bonds on the weekly or monthly payment plan.

Save For What Is Worth While

Money can be saved, and that, too, in surprising amounts if only the object is urgent enough and desirable enough.

Can you think of anything more urgent or more desirable for half the families in your community than a new home?

New houses are needed, and old houses should be fixed up—made more comfortable and attractive by remodeling and by putting in modern equipment.

Can you think of *anything* more worth while saving for?

Saving for Christmas is all right as far as it goes, and practically every bank has its Christmas Savings Club. But how much bigger and better is the idea of the "Own a Home Savings Club!"

Important Plans for Home Financing and for the Promotion of Home Building and Farm Building Improvements in every Community.

By the RADFORD ORGANIZATION, Publishers of "American Builder," "Farm Mechanics" and the Radford Building Books and Posters.

1827 Prairie Avenue, CHICAGO

Own a Home Savings Club Plan

Laying Away Money For YOU

You American Builder readers are personally interested in this.

Here is a situation in which a big circle of your neighbors will be laying aside their savings each week for the purpose of buying *what you have to sell*.

One wants a new home, and by joining the Savings Club this year he will be able to come to *you* next year with enough to start that new home.

Business for you.

Another wants a modern bathroom added, or a basement heating plant, or electric wiring; and by joining the Savings Club now he will be able to come to *you* a little later with enough to have these improvements made.

Business for you.

Another wants some repairs and remodeling to make the old home more comfortable and modern—perhaps a sun parlor or a sleeping porch added, or a new roof put on, the foundation walls raised and the cellar cemented. By joining the Savings Club now he will be coming to *you* in a few months and placing an order for these wished-for improvements.

Business for you.

Opportunity For American Builder Readers

The interests of "Our Folks" are precious to the publishers of the American Builder; and in laying the plans for this great Home and Improvements Savings Club project we have kept clearly in mind the benefits that will result to our readers.

The banks are going to profit. The individuals who make the savings are going to profit. The local merchants are going to profit. But most of all the builders—carpenters, contractors, architects, real estate men, and lumber dealers—are going to profit.

And it is these benefits *which our readers are going to enjoy* that we want to emphasize right now. The wider the application of this plan the greater these benefits will be.

Plan Will Appeal To Everyone

Talk to *anyone*, it matters not who, you will find the love of home and a longing for a "Home of My Own," which sentiment everyone appreciates. Rents have advanced and are going higher. Desirable renting houses are hard to find. The housing shortage has caught practically every community.

New home building or substantial remodeling of old homes to make them meet modern requirements is the only solution. Everyone is in favor, no one is opposed. Yet the needed improvements hang fire.

The trouble is one of financing—where to get the money for that first down payment.

American Builder and Its Readers To Point The Way

Our solution is surprisingly simple. Experts with whom we have consulted are amazed that it was never thought of before. It is so sound in its reasoning and so full of human appeal; so sensible and workable because it is in the hands all the time of those most directly interested, and because of the great flexibility of the plan.

Own a Home Savings Club Plan

The Radford Organization is establishing in every community an "Own a Home Savings Club" and a "Farm Improvements Savings Club." These will center in the local bank, special provision being made for taking care of these savings accounts.

You will find the *banker* very much interested in this plan, as it will increase savings deposits and build up the business prosperity of the community.

The *banker* is with you in favoring investment in homes, home comforts and farm building improvements—constructive, tangible investments, in preference to the foolish luxuries that are so soon frittered away.

Go to your banker and talk over this idea. Show him your copy of "American Builder" and "Farm Mechanics." See what he thinks of the substantial type of home improvements and farm improvements featured in these two great magazines.

Then tell him about the New Departments that are going to be added (starting with the November issues) that will promote and carry on this campaign.

Ask the banker to explain to you what HE has to encourage and attract those wishing to make a start in the "Own a Home Savings Club" or the "Farm Improvements Savings Club." The "ammunition" for him to use is all ready—the most striking posters you ever saw, booklets of best building

suggestions, and plans that will keep up to fever heat the home building enthusiasm of every man, woman and child who joins the Club, and will influence them to start immediately a savings account for that purpose.

If the Radford Publications man hasn't yet been to see him about this Savings Club plan, kindly suggest that he write at once to our home office in Chicago, and full particulars will go forward to him by return mail.

"What Can I Do"—You Ask

Every subscriber to the American Builder is hereby nominated (without further ceremony) to an *active participating membership* in this Savings Club organization.

You are nominated and it's up to you whether you are elected or not.

If you are in a community where there should be more building activity, more home building, etc., you will naturally want to join with us and with others in this work.

Everyone of your builder friends and and your neighboring lumberman, hardware dealer, plumber, etc., should know about this and be invited to come in and pull with the rest. We would like to have you nominate to active membership all of these whom you can recommend.

Get these men to help put this proposition across; for each one of them is just as much interested in its success as you are. What we all want is

Important Plans for Home Financing
and for the Promotion of Home
Building and Farm Building Im-
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and Posters.

1827 Prairie Avenue, CHICAGO

Own a Home Savings Club Plan

good healthy building activity and what one man does in this cause will benefit all the rest.

Everyone in the building industry should help to establish this BIG IDEA of an "Own a Home" and "Farm Improvements" Savings Club in every community. Let everyone talk it and each endeavor to explain the plan to just a few of his most likely prospective customers; and you will be surprised at the results, and the benefits that will come from this campaign.

Send Today For Membership Credentials

We have given this Savings Club plan months of careful study. It is

right from every angle. It will solve the financing problem of the new home.

We want everyone of our subscribers to know all about this and to participate in it.

As just mentioned, you are already nominated to membership. If you accept and want full information just fill out the coupon below and mail today, to the home office in Chicago.

This places you under no obligation of any sort; but it does place you in line to further your own business interests and at the same time assist all **home wishers** in your community to attain their desire.

Request Coupon for Full Information Including Membership Credentials

Headquarters:

Own a Home Savings Clubs, and
Farm Improvements Savings Clubs,
1827 Prairie Ave., Chicago.

Wm. A. Radford, President:

I ^{am} _{want to be} a regular subscriber to the American Builder and propose to follow closely the New Departments of Home Savings Club Suggestions to begin with the November issue. I want to help along this proposition in any way I can. Please send me immediately, without cost or obligation to myself, full information and Credentials of Membership.

Mark here ☐ if you are interested also in FARM BUILDING IMPROVEMENTS and want full information about the Farm Improvements Club plan, including a sample copy of "Farm Mechanics."

Name _____

Occupation _____

Town _____ State _____

Street or Box No. _____

FARM IMPROVEMENTS FINANCING SOLVED



THE TWIN BROTHER of the "Own a Home Savings Club" is the "Farm Improvements Savings Club". The two go together; and in many communities the Farm Improvements work will draw the larger following.

The farmer has long been rated as America's biggest market; and the farmer of today is going in strong for better buildings, better farming equipment and more of the comforts and conveniences that go with the modern farm home.

Our "Farm Improvements Club" plan will encourage every sort of constructive improvement in which the farmer, the farmer's wife, or the farmer's boys and girls may be interested.

Our Club plan solves the Financing Problem connected with any of these projects.

It provides for certain funds to be laid aside *in the Bank* for certain definite objects: such as a new farm home, or a farm lighting plant, or a modern water supply system, or a refrigerating outfit, or a new dairy stable with modern equipment, or a concrete feeding floor, or a warm, bright poultry house for mother's chickens, or a suitable pen and shelter for Johnnie's prize pig.

Worth While to Encourage These

American Builder readers are interested in these farm improvements. The farmers' trade is large and profitable—worth while cultivating. Builders, lumber dealers, bankers—all can well afford to go after the farmers' business. He has the money and he is going to invest a considerable amount of it *wisely* in new farm buildings and modern improvements.

The sentiment for farm building improvements is in the air; and all the farmer is waiting for is some one to put it up to him that *now is the time*. What he wants is some practical building suggestions from someone who is able to help him with his building problems.

Here is work for our readers, the *active members* of the Farm Improvement Club, in every community.

"Farm Mechanics" The Vehicle

For the promotion of this Farm Improvements Club work we have the ideal medium, designed especially for it and already a proved success.

We have an illustrated monthly magazine for *farmers*—full of suggestions and plans for modern farm homes, barns, and other farm buildings.

It is full of ideas and good suggestions for remodeling and for fixing up the place and for installing all of the

Important Plans for Home Financing
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Farm Improvements Club Plan

labor-saving and satisfaction-bringing equipment that appeals to the modern farmer and his family.

This magazine is written, illustrated and edited for farmers and their builder and dealer friends. It is full of human interest. The farmers like it.

Already more than twenty-five thousand of the most progressive farmers have subscribed. They have demonstrated their interest in a magazine of this kind by voluntarily putting up their money for it.

Don't Be Misled by the Name

Mr. Radford and his associates have been at work for five years on this idea of a monthly publication going to farmers to promote and encourage **farm building improvements**. The name selected for it, "Farm Mechanics," appeals to enterprising farmers without suggesting that it is building promotional in its purpose.

Yet more than a third of its pages are devoted to modern building ideas and plans and articles advocating farm building improvements, and the other two-thirds are filled with illustrated articles on modern farm machinery (that needs housing), or labor-saving equipment for farm buildings and farm homes, and articles on farm methods that will increase farm prosperity—and make more buildings possible.

We found it impossible to give in the "American Builder" as much space to these farm improvement matters as they require in all their details; altho we still give as much and even more than formerly. The growing im-

portance of farm improvements led us to establish this new publication.

Your Silent Salesman For Working Up Farm Building Sentiment

"Farm Mechanics", in a word, is the ideal vehicle for carrying the Farm Improvements Club Idea every month to the best farmers in your community.

It works for you all the time.

You need "Farm Mechanics" for your own personal use, in addition to its value to you in the Farm Improvements Club work. In size and style, quality of paper, etc., it's the same as "American Builder." Only it's devoted entirely to rural work.

Improvements Club Department Starts in November Issue

We are going to make "Farm Mechanics" even more effective now by featuring the Improvements Club work in a big New Department—full of farm building plans, ideas for remodeling, modern equipment, etc. This new Department starts in the November issue and will continue for at least twelve months. Four building designs **IN COLORS** will be included each month.

Don't miss it. And don't let any of your good farmer friends and best prospective customers miss it. Get them to join in time to receive this November issue. Start with the first.

A Job For Our Readers

We know you are with us in this campaign to reach the best farmers in your community and interest them in

Farm Improvements Club Plan

better buildings. The Farm Improvements Club idea opens the door for you—gives you a new approach. The farmer, his wife, and any members of his family are eligible to membership. And "Farm Mechanics" coming each month will keep their interest strong toward the proposed improvement, whatever it is.

The Banker is with you, too, in this work, for the Club naturally centers at the Bank, and he is quick to see the advantages of having funds definitely set aside in the Bank for future use in connection with some worthwhile farm improvement.

The Banker Will Co-operate

Stop in at the Bank and talk this over. The Banker is no doubt waiting for you, before deciding definitely just how the local Club campaign is to be handled. He has posters and plan books and farm improvement books,—just what is needed for the bank's end of this campaign.

If by any chance the Radford Publications man has not yet reached your town to explain this to your Bankers, please suggest to them to drop a line today to our head office in Chicago, and full particulars will come back by return mail.

Remember that both Clubs, the "Own a Home Savings Club" and the "Farm Improvements Club" will be needed in practically every community. Many of our readers will want to help to secure members to both of

these, and most banks will want to make provision for both.

Club Idea Means Teamwork

Both the "Own a Home Savings Club" and the "Farm Improvements Club" deserve the backing of every builder and every dealer in your community.

They are full of true sentiment and of human appeal. They will create an interest in home building and in worth while farm building improvements that will astonish you.

They will **reach** the people; because they get down to fundamentals.

They **solve the financing problem**; because every member is inspired and his interest sustained by the Club to become financially independant—at least to the extent of being able to make the first payment on the new home.

This is a **Thrift Club idea** for that most important of all investments—the New Home; or in rural communities for that whole range of constructive improvements which mean so much to the farmer and to his family.

By means of the Club Idea we have the stimulus of **many working to the same end.**

Enthusiasm is kept going and the idea is not allowed to die. The purpose or goal of each member is kept vividly before him (according to our plans) until he has actually laid aside

Important Plans for Home Financing
and for the Promotion of Home
Building and Farm Building Im-
provements in every Community.

By the RADFORD ORGANIZATION,
Publishers of "American Builder," "Farm
Mechanics" and the Radford Building Books
and Posters.

1827 Prairie Avenue, CHICAGO

Farm Improvements Club Plan

sufficient funds, and has realized the wished for improvements.

Line Up Builders, Dealers and Farmers

Team work and quick work are needed to set the wheels to turning.

YOU are the man to start it in your community.

First line up all the other builders and dealers, and then invite in your farmer friends and prospective customers.

Get **everyone** to help, who will help, and with their help **strive to interest just as many prospective home builders and just as many farmers** in this Club idea as you possibly can.

They will thank you for it. And it will help your business.

Identify yourself with this movement, so that you will get fullest benefit from the publicity it will have in your community.

Will You Undertake Some Work With the Farmers?

Volunteers are wanted now! The work isn't difficult—in fact it's right in line with what you are doing anyway in your regular business—and the benefits are big.

We want **you** to send today for the full information we have about this "Farm Improvements Club" plan, including Membership Credentials and a specimen copy of "Farm Mechanics".

There is no obligation of any sort tied to this—just an opportunity for **you** to do something to help along a good thing and help yourself at the same time.

Request Coupon for "Farm Improvements Club" Material

Headquarters:

**Farm Improvements Savings Clubs,
1827 Prairie Ave., Chicago**

Wm. A. Radford, President:

I am with you in your campaign to interest the farmers of this community in better buildings and other farm improvements. Please send me without obligation full information about your "Farm Improvements Savings Club," including Membership Credentials and a specimen copy of "Farm Mechanics".

Name _____

Occupation _____

Town _____ State _____

Street or Box No. _____

Note:

If you are interested also in the "Own a Home Savings Club" Plan turn back to Coupon on page 4 and use it for requesting full information and Membership Credentials.

Each of Country's Largest Trees Would Furnish Lumber for a Good-Sized House

FOREST GIANTS INCLUDED IN GOVERNMENT PRESERVES—LARGEST TREE EAST OF ROCKY MOUNTAINS IS AT WORTHINGTON, IND.

SINGLE trees that contain enough lumber to build good-sized frame houses are not so rare in the United States as one would think. There are, in fact, several thousands of them in the Sequoia, General Grant and Yosemite National Parks, which the government turned into forest preserves a number of years ago. In these parks there are more than 12,000 trees that exceed 10 feet in diameter, while the largest is 36½ feet thru, more than 100 feet in circumference.

While all of these trees are protected by the government, there are, however, many huge specimens scattered over the country. What is believed to be the largest tree east of the Rocky Mountains is a sycamore, on the farm of Solomon P. Dixon, on the banks of the White River, near Worthington, Ind.

One foot above the ground this tree measures 45 feet 3 inches in circumference, and 5 feet above the ground it is 42 feet 3 inches in circumference. Fifteen feet above the ground the tree forks. One branch is 27 feet 8 inches and the other 23 feet 2 inches in circumference. The tree is about 150 feet in height, having been reduced considerably in recent years by storms and being struck by lightning.

What is believed by scientists to have contributed to the growth of the sycamore tree at Worthington is the fact that the soil about it is subject to frequent inundation. The White River overflows its banks and deposits a new layer of silt on the fields at least once each year. At one time the water reached the fork of the tree.

An approximate estimate of the amount of lumber this tree would produce can be made by comparing it with a similar tree that stood nearby. A number of years ago this tree was cut. It was so large that it could not be hauled to mill, but was floated down the river. It produced five 10-foot logs, which measured nearly 10,000 board feet, which would supply the lumber for an ordinary seven-room frame house.

The Trees in the National Parks

The largest of the big trees in the Sequoia National Park is the "General Sherman." This tree is 279.9 feet high and has a diameter of 36½ feet.

Three thousand fence posts, sufficient to support a wire fence around 8,000 or 9,000 acres, and 650,000 shingles, enough to cover the roofs of 70 or 80 houses, were taken from one of these trees, nearly as large as the General Sherman, and there still remained hundreds of cords of firewood, which could not be used because of the prohibitive cost of hauling.

These trees range in age from 500 to 3,000 years, the rings of one of them showing that it had lived 3,150 years, making them the oldest living things on earth.

The sequoias are found scattered all over the parks, but the greater trees are gathered in thirteen groups of many acres each, where they grow close together. The big tree country is one of the most beautiful places in America, abounding in splendid streams, noble valleys,



Giant Sycamore Tree, Near Worthington, Ind., Believed to be the Largest Tree East of the Rocky Mountains in the United States. It is 42 Feet, 3 Inches in Circumference and 140 Feet High. Its Age Is Unknown, But "Oldest Inhabitants" Declare That It Has Not Increased Perceptibly in Size in the Last 60 Years.

The Country's Largest Trees



General Sherman Tree, Most Celebrated of All the Sequoia Trees in the National Parks of California. It is 279 Feet High and Has a Diameter of 36 Feet, 6 Inches. It Is Believed to Be More Than 3,000 Years Old. The Man Standing Beside the Tree in the Illustration Gives Scale to the Picture. This Is But One of the Many Famous Sequoia Trees in the Sequoia, General Grant and Yosemite National Parks.

striking ridges and towering mountains.

There are three groves of big trees in the Yosemite Park, many of them being named. One of the accompanying illustrations shows two of them, the "Ohio" and "Haverford" trees.

Regarding the age and appearance of these trees, a writer said:

"In the days of the Trojan war and the exodus of the Hebrews from Egypt, this oldest tree was a sturdy sapling, with stiff, prickly foliage like that of a cedar, but far more compressed. It was doubtless a sharply conical tree, 20 or 30 feet high, with dense, horizontal branches, the lower ones of which swept the ground. Like the young trees of today, the ancient sequoia and the clump of trees of similar age which grew close to it must have been a charming adornment to the landscape. By the time of the Marathon, the trees had lost the hard, sharp lines of youth and were thoroly mature. The lower branches had disappeared, up to the height of 100 feet or more; the giant trunks were disclosed as bare, reddish columns, covered with soft bark 6 inches or a foot in thickness; the upper branches had acquired a slightly drooping aspect; and the spiny foliage, far removed from the



The "Three Graces," Trees Famous in the Yosemite National Park



"Wawona" and "Ohio" Trees in the Yosemite National Park. "Wawona" Is 26 Feet Thru the Opening. Its Girth 10 Feet Above the Ground Is 60 Feet, and It Is 227 Feet High.

ground, had assumed a graceful, rounded appearance. Then for centuries, thru the days of Rome, the Dark Ages, and the period of the growth of European civilization, these ancient giants preserved the same appearance, strong and solid, but with strangely attractive, approachable quality."

Some idea of the size of the trees in the Sequoia, General Grant and Yosemite National Parks can be gained by the illustrations. One shows the General Sherman, the largest of these big trees; another pictures two trees in the Yosemite Park. The huge sycamore at Worthington, Ind., is also shown.



MENTAL exercise is good for everyone. Every month there are a number of questions in the Correspondence Department that will give the members of the AMERICAN BUILDER Family something to study over.

Learn By the Government's Mistakes

REPORT OF THE U. S. HOUSING CORPORATION POINTS THE WAY TO BETTER HOME BUILDING

By Henry V. Hubbard

NOTE—Under the title "General Observations," the U. S. Housing Corporation recites some of the mistakes that were made in its industrial housing projects. These mistakes are not unusual in home building, and AMERICAN BUILDER readers can get some helpful hints by reading the narrations given here—THE EDITOR.

UNDER the necessities of war, certain forms of construction were decided on which in peace time would not have been resorted to.

The War Industries Board was the final arbiter in nearly all cases as to forms of construction and materials. Naturally, the policies which they determined from the point of view of general economy of material and transportation did not always produce results which were satisfactory from the point of view of our particular housing developments. In the light of our experience it is obvious also, now that the war is over, that, as was inevitable, some errors were made and that some construction, tho it aimed at economy, did not so result.

In the descriptions of the dwellings for each project, certain features particular to the project have been noted. The general faults, however, if faults they may be called under the circumstances, common to all or at least to a great many of the Corporation's developments, are sufficient in number and importance to be discussed here, so that the prospective builder may be warned against using the so-called Government standards (both design and construction) without careful consideration of those deficiencies which were compelled by the war.

In speaking of these defects in connection with the Government housing, we are in many cases calling attention to faults common, also to a very large percentage of prewar houses built privately — houses which tho cheap to build are costly to

the money would be well spent under ordinary circumstances in providing the extra accommodations.

The same comment is applicable in many cases to porches. Similarly a large saving was affected by omitting the finish in attics, where oftentimes there was sufficient space for an extra room which if lighted by a dormer window would have been at least as com-

fortable as a small room on the second floor.

But the greatest savings were made in materials, lumber and millwork, including both the quality and kind; also in the design of mouldings.

Pitch Roofs So They Will Drain Properly

Attention should be called to the many roofs which have insufficient pitch to drain properly. A roof with



Pitch the Roofs so That They Will Drain Readily. Thus Prolonging Their Life. Thirty Degrees or Less Is Too Flat for Shingles.

insufficient pitch will leak unless the roof covering is such as is usually placed on flat roofs. With such materials as slate, asphalt shingles, and wood shingles, a roof with a pitch of less than 30 degrees is bad. In the case of wood shingles it is specially bad, as, besides the consequent decay to the construction of the roof, the shingles themselves rot so quickly as to require renewal in a few years.

Flashings in many of the Government projects are of other materials than metal, for metal was the scarcest of all war materials and most requisite for the war. Flashings should be of tin or, better yet, lead or copper, as those last two materials are practically everlasting. For flat roofs, too, copper is much to be preferred. Many of the projects are built on sites of such soil formation as would ordinarily require that the cellars be waterproofed, but in no case has this been done. Where cellars are dug in clay or rock or shale, it is advisable to waterproof not only the outside of the cellar walls but also under the cellar floors. Tile drains at the footings are of great value, but where water pressure is likely to exist the tile drains are not always sufficient.

It is inadvisable to stucco walls down to the grade level, as was done on some projects. Capillary attraction causes moisture from the earth to permeate the stucco and frost cracks it off of its backing.



The Difference of a Foot or Two in the Size of a Room Makes a Great Difference in the Comfort and Convenience of the Home Owner.

own because of the repairs consequent to inferiority of construction, or inconvenient to live in on account of poor design.

For example, let us consider the plans generally. We note many rooms which, while perfectly livable, lack in size just the few square feet required to give real comfort. These few feet save a large amount of money in the aggregate of all the houses built, but

When a chimney flue is required to be 8 by 8 inches or 8 by 12 inches, no part should have less than that area. It seems almost unnecessary to state this, but the error occurred sufficiently often among the thousands of houses built for the corporation, and it occurs in common practice to such an extent as to be worthy of note.

Poor Millwork is a Bad Buy

The millwork or mouldings furnished for the corporation's houses is, generally speaking, coarse in detail and poor in quality. There are but few exceptions. It was considered necessary as a war measure to use stocks on hand with the mills rather than to cut the mouldings anew. As a result many of the cornices of houses and many of the other moulded parts, such as porches, are too heavy in appearance, by no means as good as the details made by the architects in these cases. This is as true of interior millwork as it is of the exterior. But, all in all, except where a few houses depended upon their millwork for their refinements, there is no very glaring fault in the general design due to the conditions stated.

The quality of material, however, is quite another matter, and there is so much inferior quality of woodwork that it would almost seem that a great part of the second-grade wood trim and boarding in certain parts of the country must have been used up on the Government's housing. We find siding of such poor quality as to raise the question of the advisability of using it, even in war times, and flooring which proved to be more economical to discard than to use because of the great cost of laying. Lengths less than 3 feet, as a rule, might better be discarded or used in closets.

Good Hardware is Essential

Exception may be justly taken to the design of many of the knobs and fancy plates with which the doors are fitted. They would have looked much better had they been perfectly plain rather than highly ornamented. They are evidently stock which has existed for some time, and the best that can be said for them (as well as the inferior wood used) is that by their use the market is purged to that extent and therefore houses built in future will not have them because they are cheap.

As a rule it is wise to have too much heating capacity in a house rather than too little, but in most of the Government houses the question still arises whether small furnaces would not have been sufficient. In con-

nection with the heating, exception may well be taken to the positions of the wood lattice coverings of the cold-air returns in the floors. They should have been placed in side walls, as was done at two of the projects. It would, of course, have helped matters had metal grilles been used, but even in this case the openings might be at corners of rooms rather than in places over which persons are required to pass.

The uniformly high-grade designs of the houses and the care with which they were worked out by the architects leave little to be said in general criticism of them. The few minor details which might be noted are, however, worth consideration for future building.

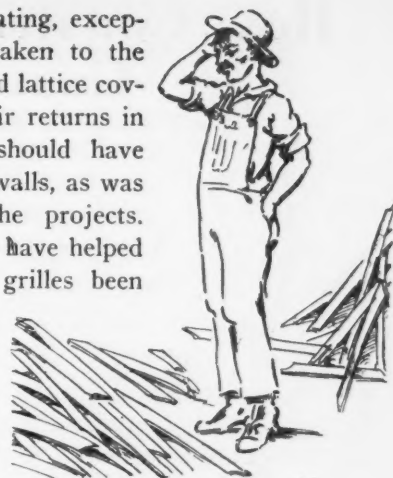
Have Sufficient Headroom on the Stairs

In many cases headroom on stairs could be bettered by beveling the header beam of the staircase well.

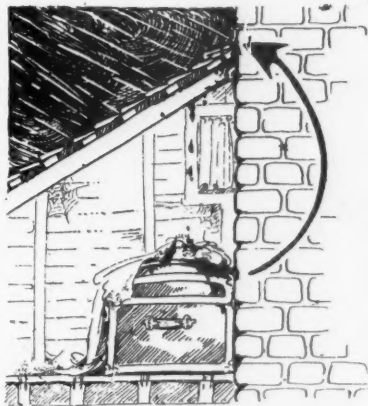
In all the houses, except in the development at Newport, R. I., no provision has been made for access to attic spaces. At Newport a ladder was constructed between the studs directly beside the opening in the attic floor. This is a very simple way of getting to the attic.

A great majority of the houses have wooden gutters and down spouts. In cases where the wood gutters are built into the cornice the appearance is much better than in cases where they are hung like a metal gutter. The wooden spouts or leaders should always receive a coat of asphalt paint on the inside to preserve the wood.

The foregoing criticisms apply to certain instances of the work of the U. S. Corporation. In relation to building generally, many warning notes could be sounded in the hope of raising the standard of house construction, but this would be out of place in the present report. It is hoped, however, that the "housing standards" as used by the corporation may be of value in suggesting economies in the use of materials and general saving for the house builder whose right it is to get a return of a dollar's worth for a dollar spent.



Odd Lengths of Lumber Are Sometimes Cheaper, but They Make a Poor Job.



Tight Flashings Prevent Leaks Around the Chimney.



Be Sure There Is Plenty of Headroom in the Stair Wells.

How Construction Costs Are Kept Under the Cost-Plus-Fixed-Fee Contract

BOOKS KEPT AT JOB OFFICE—OPEN FOR OWNERS' AND ARCHITECTS' INSPECTION

By F. A. Wells

Vice-President and Treasurer, Wells Brothers Construction Co., Chicago

NO contractor who values his capital can afford to do without adequate cost records, both as a check on the job in progress and as a basis for future estimating. Yet the simpler that system of accounting, the better, and any refinements further than those necessary to give the actual required data are a waste of time and money. Some contractors keep their books under their hats or in the left-hand pocket of their coats, where all invoices go preparatory to paying. At the opposite extreme are firms who maintain a complicated system of accounts, both at the job and at the home office. Accounting methods sufficient for the lump-sum contract may be insufficient for the cost-plus-fixed-fee contract, under which the owner and architect must have access to the accounts at all times.

We have found the following system to be adequate for cost-plus jobs and with only a few changes this is the system put into effect on such typical work as the four warehouses we have built for Montgomery Ward & Co., at Chicago and Kansas City, the Butler Brothers' Chicago Mail Order Warehouse, Rand, McNally & Co.'s Chicago Publishing House and other similar work in this country and Canada.

Occasionally we have found an owner who prefers to be given such data as will permit his own accountants to keep a complete system of books. Generally, however, our accounts, kept on the job and open at all times for inspection, are considered sufficient, in view of the detail statements we render to the owner every two weeks—bearing the approval of the owner's representative, who is designated for that purpose. We urge owners to have their auditors frequently make examinations of accounts for their own satisfaction.

The system we are now using is briefly the keeping of a:

1. Cashbook, Voucher Record and Ledger, combined;
2. Invoice and Payroll Register, combined;
3. Detail Cost Record;
4. Accounts Payable Record (Vendors' Accounts).

1. *The Cashbook, Voucher Record and Ledger* is used for the recording of all cash received, cash disbursed by vouchers and all journal entries.

2. *The Invoice and Payroll Register* is used for the recording of all invoices and payrolls. The invoices and payrolls are numbered consecutively. This register has columns

for date, invoice number, vendor's name, total amounts, both debit and credit, and individual columns for the 20 main accounts used in distribution of costs. The register represents an absolute detail control of all approved charges to the job, as only audited and approved items are given a register number or entered. The payrolls are given register numbers and approved the same as invoices. The office copies of all invoices are filed in numerical order in an ordinary letter file drawer, and bound in numerical order, in lots of 50 to 100, using an ordinary heavy file folder for cover, clamping the invoice to the folder.

3. *The Detail Cost Record* is used for the recording in detail the distribution of costs among the main accounts as shown on invoice register.

4. *The Accounts Payable (or Vendor's Accts.) Record* is used for the recording of all invoices from vendors. After the invoices have been entered in the invoice register and detail cost record book, they are entered as a credit to vendor in accounts payable. Each vendor has a separate page or sheet. After entry is made, it is placed in file under vendor's name until ready for payment. When payment is made, same is vouchered and charged to accounts payable (vendor's acct.) and cash credited.

Office Routine of Purchase Order, Invoices and Voucher

Issuance of Purchase Order—In Quadruplicate.—The original of order is sent to vendor, the duplicate is filed numerically (which forms order register), triplicate is filed in open order file (vendor's name order), quadruplicate (which forms material receipt or tally sheet) is filed by the office material clerk awaiting receipt of material.

Receipt of Material.—Upon receipt of materials, the office material clerk checks and signs the material receipt portion of the order and file completely with supporting delivery tickets, etc., awaiting invoices.

Checking and Auditing Invoices.—Invoice upon receipt is checked against material receipt or tally sheet for receipt of material. Extensions, prices and footings are checked and certified. Cost distribution is checked and entered. Invoice is then audited for discount and cost distribution and certified. Invoice then passes to the superintendent for his approval and the approval of the owner's representative.

Entry of Approved Invoices in Invoice Register and Vendor's Account.—Upon return of approved invoice from the superintendent, the bookkeeper gives the invoice numerical register number and enters in the invoice register. Only fully approved invoices are given register number. Invoice is then posted to the credit of the vendor in accounts payable account and a charge to the detail cost record.

Journalizing Accumulated Totals of Invoices Registered to Ledger.—Accumulated totals in the invoice register are journalized in the ledger (which is also the voucher record) at daily, weekly or semi-monthly periods as is found practical.

Voucher Check.—We have found the voucher check system to be the most convenient. The voucher is made in quad-



F. A. Wells, Vice-President and Treasurer, Wells Bros. Construction Co., Chicago.

uplicate at the construction office on the job, and the approval of the owner's representative is often indicated on all copies of the voucher. The check, or original voucher goes to the vendor, the duplicate to our general office for our records, the triplicate is kept as the job record, and the quadruplicate is the "owner's copy," which is forwarded to the vendor with original to be receipted by him and returned. At intervals we furnish the owner with statement showing vouchers paid and receipted vouchers attached.

Gives Basis for Future Estimating

Since the major purpose of cost accounting is to give an adequate basis for future estimating it is important that so far as practicable the form of cost accounting shall follow the form of estimate. This is not practicable to the last subdivision of each of our general accounts, but sufficient to permit intelligent use of all cost figures. With such figures it is possible to compare not only final costs, but costs at any stage of the job, with the original estimated cost for that portion of the contract. We frequently divide our estimate by floors, in the case of a many-storied building, in order to have a check upon quantities and upon expenditure at several stages of the work.

Distribution of Accounts

We use the demical system of classification of accounts. The classifications number 100 to 600, inclusive, and 900 are for our general books, which embrace the assets and liabilities, revenues and income accounts—we will omit these in our discussion of construction cost accounting in connection with cost-plus and fixed-fee contracts.

The general distribution is under the following headings:

700 and 800—Construction Costs (Summary of General Headings.):	
710 Excavation.	810 Field Overhead.
720 Caissons.	820 Extra Work.
730 Footings.	830 Subcontracts.
740 Trench and Wall.	840 (Subcontract) extra work.
750 Concrete and Fireproofing.	850
760 Masonry.	860
770 Carpentry.	870 Repair Contracts.
780	880
790	890 Company Expense (not chargeable to owner).
800 Plant Expense.	

The sub-divisions of headings 710-790 are between the items labor (1), material (2), and liability insurance (3). Thus labor in excavation would be 711, material in excavation, 712, and liability insurance in excavation, 713.

A further division of the various kinds of labor and materials is made. The following classifications illustrate this point:

① Cash Book Voucher Record Journal & Ledger

		Cash		Construction Costs		Accounts Payable		Company Asset		
Date	Ref. No.	Name	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit
June 1	1	Balance from Job								
June 1	2	Balance from Job								
June 1	3	Balance from Job								
June 1	4	Balance from Job								
June 1	5	Balance from Job								
June 1	6	Balance from Job								
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June 1	167	Balance from Job								
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June 1	183	Balance from Job								
June 1	184	Balance from Job								
June 1	185	Balance from Job								
June 1	186	Balance from Job								

Labor—711.

- 711.01 Digging (General).
- 711.02 Digging sub-basement.
- 711.03 Sheeting and shoring banks.
- 711.04 Shoring adjacent building.

Material—712.

- 712.01 Lumber.
- 712.02 Underpinning adjacent building.
- 712.03 Rings (steel).
- 712.04 Cement.

Liability Insurance—713.

For convenience we have listed the charges of labor and material in the order they usually appear in building construction costs:

Labor	Material
.01 Digging (General).	.01 Lumber.
.02 Digging Sub-basement.	.02 Underpinning Adg. Bldg.
.03 Sheeting and Bracing Banks.	.03 Rings (Steel).
.04 Shoring Adj. Buildings.	.04 Cement.
.05 Underpinning Adj. Bldg.	.05 Sand.
.06 Pumping.	.06 Stone.
.07 Back-filling and Grading.	.07 Brick.
.08 Cutting Old Footings.	.08 Wall Tie and Inserts.
.09	.09 Steel (Structural).
.10 Placing Lagging and Rings.	.10 Steel (Reinforcing).
.11 Ventilating.	.11 Nails and Wire.
.12 Mixing and Placing Concrete.	.12 Clamps, Purchased or Rented.
.13 Build. Forms—General.	.13 Tile.
.14 Build. Forms—Exterior Columns.	.14 Protection (Lumber, Etc.).
.15 Build. Forms—Interior Columns.	.15 Terra Cotta.
.16 Build. Forms—Spandrels.	.16 Granite.
.23 Lay Brick.	.25 Frames and Sash.
.26 Bend Steel.	.30 Interior Trim.
.35 Set Cut Stone.	.35 Coping.
.44 Fit and Hang Doors.	
.56 Unload and Handle Material, Etc.	
.60 Clean Up Rubbish.	
Add as many new accounts as are needed.	

Should charges be made in connection with concrete and fire-proofing under subdivision 750, they would follow the same order as in excavation:

- 751.12 (Labor)—Mixing and placing concrete.
- 752.04 (Material)—Cement.
- 753 Liability Insurance.

Or, Carpentry—Subdivision 770:

- 771.44 (Labor)—Fit and hang doors.
- 772.25 (Material)—Frames and sash.
- 773 Liability Insurance.

Classification of Plant Expense

Subdivision 800 covers plant expense and conforms with the sub-classification of the 700 accounts as much as practicable.

The following are the headings under 800:

801 Excavation.	806 Masonry.
802 Caissons.	807
803 Footings.	808
804 Sawmill.	809 General (items charged to general equipment).
805 Concrete and Fireproofing.	

A further typical subdivision of the accounts under this heading is:

801 Excavation.	801.4 Rental of Equipment.
801.1 Transportation (of Equipment Plant).	801.5 Fuel, Lubricants and Power.
801.2 Erection of Equipment.	801.6 Repairs.
801.21 Labor.	801.7
801.22 Material.	
801.3 Equipment on Charge and Credit Basis.	
801.31 Labor.	
801.32 Material.	

Should charges to plant in connection with concrete and fireproofing be made, they would be charged as 805, with divisions shown above.

Field Overhead

811 Salaries, General Labor and Expense.

811.1 Superintendent and Engineers.	811.3 Materialmen and Time-keepers.
811.2 Office Employees.	811.4 Laying Out Building.

- 811.5 Watchman.
- 811.6 Waterboys.
- 811.7 Toolmen.
- 811.8 Liability Insurance—Superintendent and Watchman.

- 811.9 Traveling Expenses—Superintendent, Engineer, and Office Men.

812 Engineering Expense.

- 812.1 Plans, Detail and Eng. Supplies.
- 812.2 Photographs.
- 812.3 Engineering Service.
- 812.4 Architect's Fees.

813 Office Expense

- 813.1 Rent, Light and Heat.
- 813.2 Stationery and Printing.
- 813.3 Telephone.
- 813.4 Telegraph.
- 813.5 Postage and Expressage.
- 813.6 Rent on Adding Machine and Typewriters.
- 813.7 Furniture.
- 813.8
- 813.9 Misc. Office Expense—Towels, Etc.

814 Other Fixed Field Expenses

- 814.1 Bonds (Maintenance and Construction).
- 814.2 Permits and Licenses, Boiler Inspection.
- 814.3 Fire Insurance.
- 814.4 Legal Services.
- 814.5 Burglar Insurance.
- 814.6 Association Dues.
- 814.7 Advertisements.
- 814.8 Floor Tests.
- 814.9 Ring Tests.

815

816 Temporary Structures (Labor and Material)

- 816.1 Offices.
- 816.2 Toilets.
- 816.3 Tool House, Blacksmith Shops, Storage Sheds, Etc.
- 816.4 Stairs and Ladders.
- 816.5 Fences, Sidewalks, Covers and Other Enclosures.
- 816.6 Temporary Platform and Driveways.
- 816.7
- 816.8 Repairs and Protection to Adjacent Property.
- 816.9 Protection to Public Utilities.

817

818 Temporary Light, Heat and Power.

- 818.1 Light.
- 818.2 Heat.
- 818.3 Power.

819 General Cleaning

- 819.1 Labor.
- 819.2 Teaming.
- 819.3

820 Extra Work

- 820.1 Use as many numbers as accounts charged.

830 Subcontracts

- 831 Wrecking, Excavating and Shoring, Etc.
- 831.1 Wrecking—Contract.
- 831.2 Excavation—Contract.
- 831.3 Shoring—Contract.
- 831.4
- 832 Heating, Plumbing, Wiring Elevators, Etc.
- 832.1 Sub-heading for each kind of sub-contract.
- 833 Interior Construction.
- 834 Painting and Glazing.
- 835 Millwork.
- 836 Roofing.
- 837 Fireproof Doors and Windows.
- 838 Interior Finish.
- 839 Structural Steel.

840 (Extra Work) Sub-contracts

- 841 Sub-heading for each kind of work done.

850

800

- 870 Repair Contracts (For Small Jobbing Contracts)
- 890 Company Expense (Not Charged to Owners)
- 891 Subheadings for Each Kind of Expense.

Detailed Statement of Construction Cost

At stated periods we take from the cost records a summary and detail statement of construction costs in the following form:

Acct. No. | Name of Acct. | Item | Amt. | Cost per Unit | Est. Cost | Diff.

The last column is in black or red; naturally the red items will have careful scrutiny to ascertain why costs are running above estimate. This statement is primarily for our own use, but the owner may have a copy if he wishes.

Owner Knows Total Expenditure at All Times

Under the cost-plus-fixed-fee contract the owner generally furnishes the funds to finance the contract. We maintain an entirely separate bank account for each cost-plus contract representing the owner's funds, and where agreeable to the owner, we arrange for the owner's representative to countersign all checks drawn by us on this account. At the start of the work we furnish an estimate of the anticipated amount of labor

and material bills covering an initial period of two weeks or more to the owner, who then advances the funds to cover these requirements. When the owner's receipted copies of vouchers covering this period are returned from the vendors, a statement is given to the owner showing amounts actually paid for payrolls, materials and sub-contract work, with receipted vouchers attached. That total is then credited to us by the owner on account of contract.

The advantages of having all accounts handled at the job are apparent. The distribution, if not clear from the purchase order, can be referred to the superintendent and the fact that the books of accounts are at all times open for the owner's inspection, is an assurance to him of honest treatment. The fact that he approves purchases of materials before made and again has the opportunity of questioning invoices prior to payment, leaves the control with him and prevents the accumulation of minor, disputed items, which if left for settlement until the completion of the contract, might not be readily explained.

But a system of accounts, no matter how perfect, cannot influence the cost of work except as it points out from time to time divergence from the preliminary estimate and unless such differences are promptly taken in hand, the reasons investigated and the remedy applied. The success of work under the cost-plus contract is still dependent upon the integrity of the

contractor and his ability to perform.

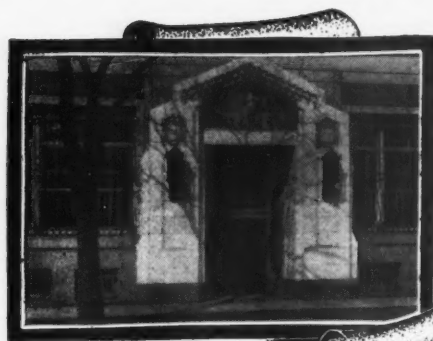
We have used this system of accounting with entire satisfaction to firms mentioned above in this article and to many others such as the Wm. Davies Company, Ltd., the largest packers of Canada, the Robert Simpson Co., Limited, Toronto, for whom we built originally on the cost-plus-fixed-fees basis and from whom we have received many repeat orders, being now engaged in work at Halifax on the same basis. This is adequate proof that the cost-plus contract is workable and that the owners not only feel safe, but prefer this method because under it 90 per cent of the savings under the preliminary estimate accrue to the owner, because the 10 per cent retained by us is a reasonable incentive for us to make every possible saving and because additional costs incurred thru no fault or omission of the contractor are rightly chargeable against the builder and should not reduce or wipe out his profit. There is incentive for the contractor to make all possible savings under both old and new contract and some of the savings must go to the contractor to give him that incentive. Ten per cent we believe to be adequate and the 90 per cent going to the owner builds up for us a good-will account which practically assures repeat orders as new work becomes necessary. The building of a relationship which will insure repeat orders is just as important in contracting as in merchandising.

③ Detail Cost Record

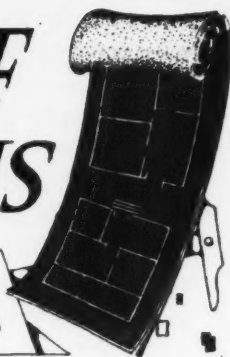
ACCOUNT 710 Excavation

JOB American National Bank YEAR 1917

1917		TOTAL		DISTRIBUTION			
DATE	NO.	FROM	OR	CR	711 Labor	712 Material	713 Liability Insurance
					711.01 Digging (Ground)	711.02 Digging (Basement)	711.03 Shoring & Bracing (Basement)
					Amount	Amount	Amount
June 1	1	Edw. Hirsch Co.					
June 1	2	Pay roll					
June 1	3	Barry Bros. Co.					
June 1	4	London Trust Co.					
June 1	5	Edw. Hirsch Co.					
June 1	6	Pay roll					
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ALL SORTS OF BUILDING PLANS



Design for an Elks Club Building

By Herbert C. Crocker

FRATERNAL orders in the smaller cities over the country are showing a greater interest in owning their homes, or club houses, where members may congregate to spend evenings, receive candidates into the mysteries of the order and where they may entertain their families and friends at dances, cards and social gatherings. Several of the principal orders in the United States have been exceptionally active and there promises to be a great deal of work along this line in the next few years.

Attractive club houses, similar to the one shown in the illustration, help to beautify the city in which they are located. There is a tendency to build in the residential portions of the city and in almost every case without the least protest.

The one shown in connection with this article is the home of the Elks, at Granite City, Ill. It was completed a few months ago at a cost of \$24,534. Only the best of every material enters into the construction.

The contract price for the building proper was \$20,048. The heating system cost \$3,350 and the plumbing added an additional \$1,136 to the finished cost. The price for the furnishings was \$6,000.

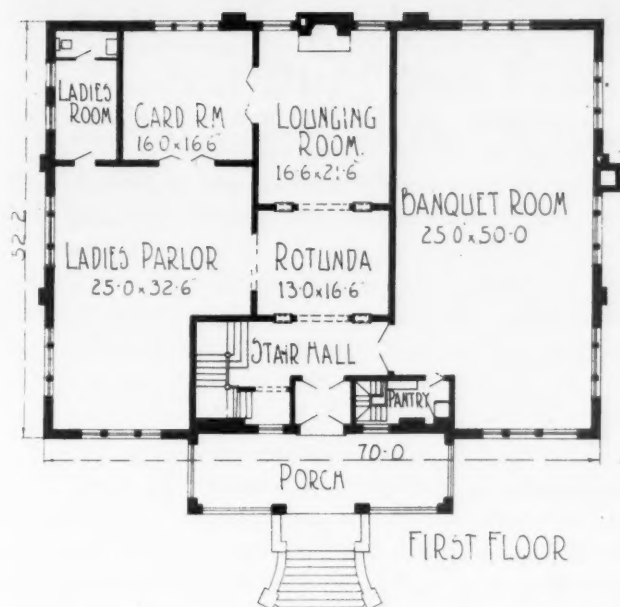
Rough Brick with Stone and Terra Cotta Trim

The building is 70 by 52 feet. It has a large porch across the front with a balcony above. The exterior finish is of rough red brick with stone and terra cotta trim.

The interior has many good features. The base-



Exterior View of the Elks Club, Granite City, Ill., Designed by Charles Pauly & Son, of Granite City. This is an Excellent Example of the Modern Homes the Elks and Other Fraternal Orders Are Building.



First Floor Plan of the Elks Club, Granite City, Ill.

ment, with its rathskeller and billiard room has faced red tile and heavy beamed ceilings. It is soundproof, music from the piano and other noises being insulated from the floor above. There is an outside entrance to the basement.

All of the floors are of hardwood with good-looking, and somewhat odd, fireplaces of red tile. Lounges and easy chairs add to the comforts and attractiveness of the club house.

The balcony is frequently used by bands and orchestras playing at the club. There are conveniences for every occasion.

The entrance to the basement is thru a vestibule and lobby. Beside the rathskeller and billiard hall, the kitchen and buffet, each with ample storage facilities, are located in the basement. The janitor has quarters convenient to the boiler and coal room.

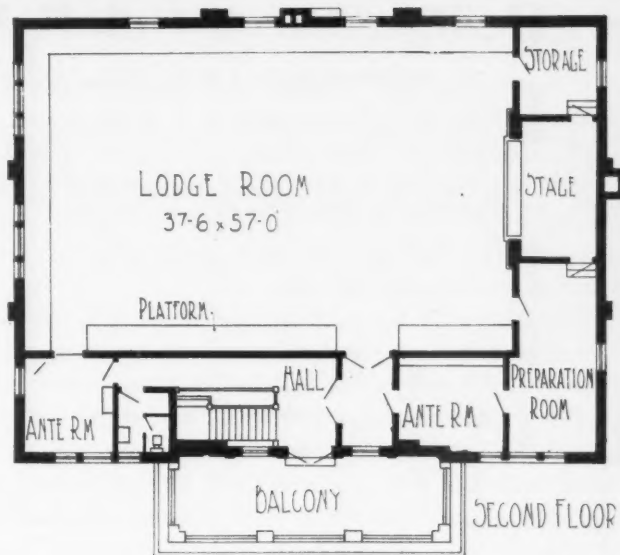
A rotunda provides entrance to the first floor. It contains the stairway to the second floor. The office is on this floor. Nearly one-third of the first floor, a space 25 by 50 feet, is given over for a banquet hall. The wives of members frequently utilize the hall for their private card parties and other social gatherings. The serving pantry is nearby.

There is a large ladies' reception room, a lounging room, card room and ladies' cloak room taking up the remainder of the first floor.

The lodge room is 32 by 55 feet. It has a fair-sized stage, 9 by 16 feet, with dressing and preparation rooms, as well as space for storage purposes. The toilet and ante-rooms are well planned across one side of the building.

Plans and specifications for the building were prepared by Charles Pauly & Son, Granite City, Ill., architects.

The perspective of the club house, shown on the preceding page, gives many interesting details of the construction, notably the method of using the face

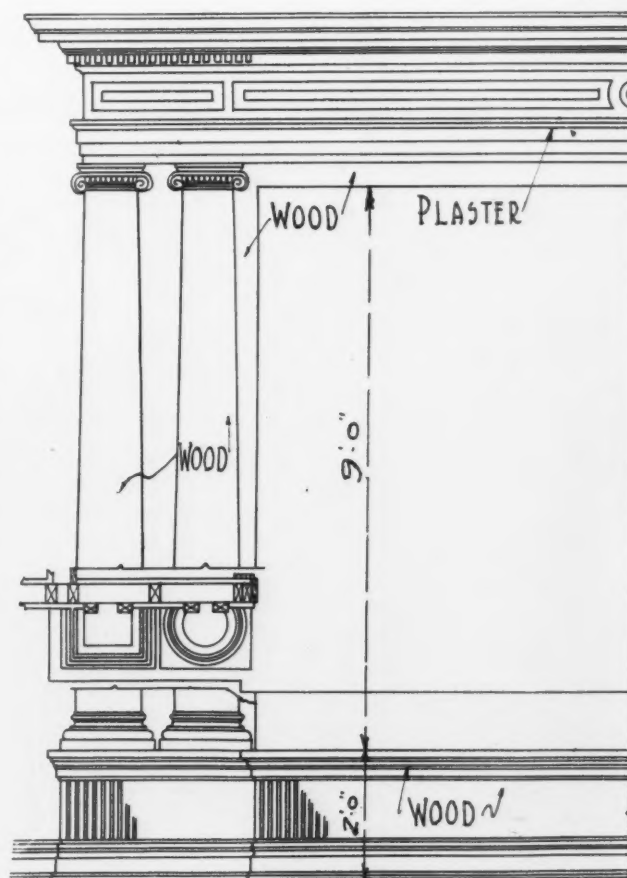


Second Floor Plan of the Elks Club, Granite City, Ill.

brick in panels, flat arches and soldier courses; also the treatment of the cornice, and the pergola effect under the overhang of the roof at the front.



BY the new method of making up the Correspondence Department of the AMERICAN BUILDER, clippings may be made without destroying other reading matter. A scrapbook can be compiled from the valuable building hints that are contained in this department.



PROSCENIUM ARCH

Detail of the Proscenium of the Elks Club, Granite City, Ill.

Design for a Small Motion Picture Theater

TERRA COTTA FRONT AND TRIM MAKE THIS AN ATTRACTIVE BUILDING

EXTERIOR attractiveness is a most desirable feature of a motion picture theater. A building that will draw patrons to it because of the beauty of the exterior is the sort of a building that the owners of picture theaters want, and one that contractors can recommend.

The design shown on this page, while it is planned to seat fewer than 500 persons, 360 on the main floor and 100 or more in the balcony, is an excellent one, in that it possesses the strong quality of attractiveness. As will be seen by the illustration, the front is of terra cotta, which is not only bright and attractive, but can be kept so with little work. The arch over the canopy, glazed with art glass, the brilliant terra cotta front wall, and the artistic trim, also of terra cotta, make this theater most pleasing to the eye. The tiled floor of the lobby is another good feature.

The dimensions of the building are 36 by 104 feet. Seats are provided on the main floor for 360 persons, and there is a good-sized stage, which now is incorporated into most theater designs, as with the growth of the motion picture industry, managers are adding musical features and vaudeville acts. The building is of standard brick construction.

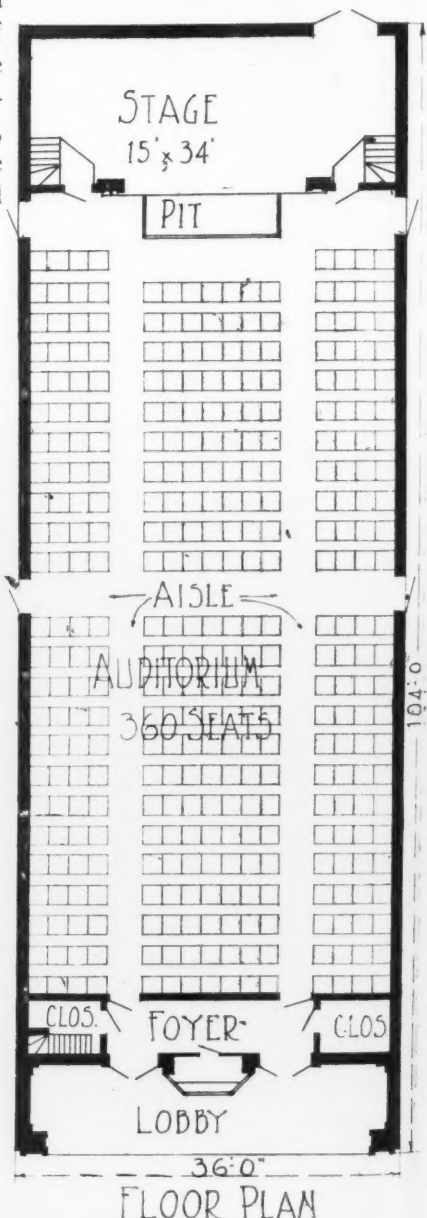
In designing this building and locating the seats, the architect has taken into consideration the several theater building regulations that are in force in most cities, and are being written into the building ordinances of the smaller towns. The space between the seats is wide, as are the aisles; exits are provided at advantageous places. In the center of the auditorium, there is a cross aisle leading to exits on either side.



THE department "Catalogs, Bulletins and Books Received," which appears in the *AMERICAN BUILDER*, is valuable to every member of the building industry. Here is listed catalogs and books that are instructive, as the publishers not only tell about the materials, tools and equipment they manufacture, but give many excellent building methods. All of this information is placed at the disposal of the readers of the *AMERICAN BUILDER* without cost, other than the postage required to ask for it.



Front Elevation of a Small But Exceptionally Attractive Motion Picture Theater. Terra Cotta Is Used for Both Walls and Trim.



Floor Plan of Motion Picture Theater, 36 by 104 Feet.

Design for Automobile and Accessories Sales Building and Public Garage Combined

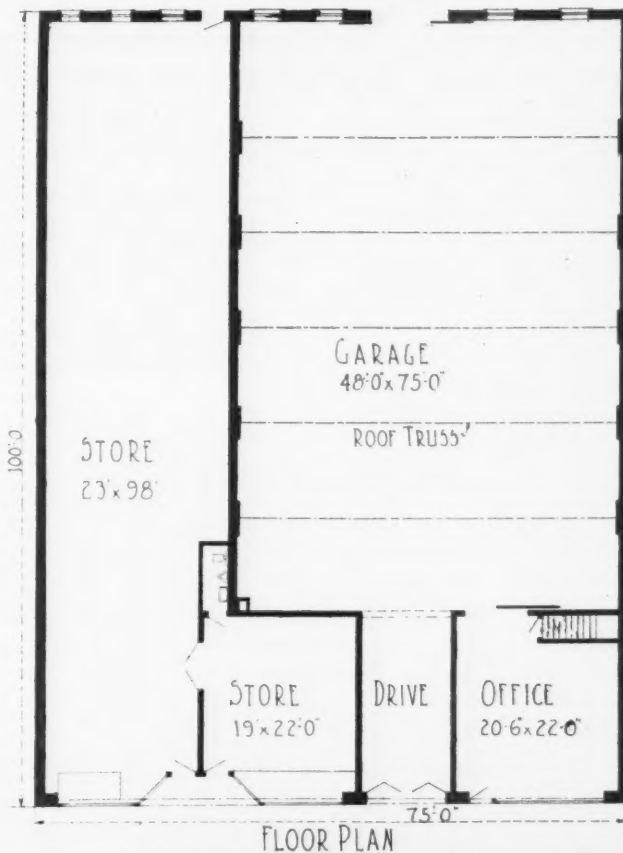
STRUCTURE FURNISHES SPACE FOR SALES, STORAGE AND REPAIR ENDS OF THE AUTOMOBILE BUSINESS

SERVICE stations—that is, places where automobiles are stored and repaired, and the many accessories that go with the machines are sold—have become important features of the automobile business. For that reason many auto sales agencies are combining “service stations” with their salesrooms, and want buildings especially designed to accommodate the two branches of their business.

Here is a design for such a building. The dimensions are 75 by 100 feet. It is a one-story building, of brick construction. It will be noted that the frontage on the street to a depth of 22 feet has been utilized for salesrooms for accessories, while at one side of the building there is an automobile sales and show room, 23 by 98 feet in dimensions. Thus the three departments of the business are brought under one roof.

The office of the garage, at the extreme right, is 20 feet 6 inches by 22 feet. The driveway entrance to the garage, which is 48 by 75 feet, is 11 feet wide and is closed with double folding and sliding doors. The other store, where accessories are to be handled, is 19 by 22 feet.

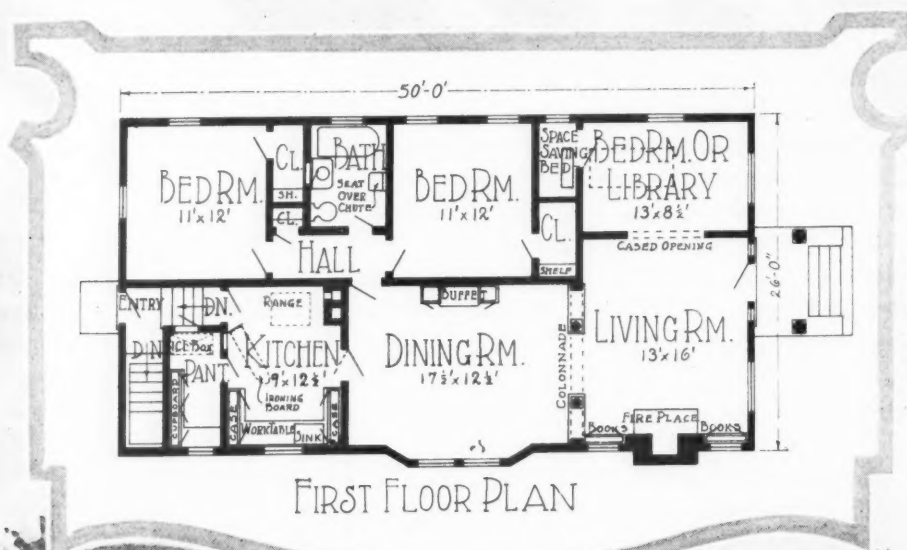
A feature of this design is the extraordinarily attractive exterior, made so by the use of face brick and terra cotta, and the irregular cornice line. The roof is supported by trusses and at intervals there are skylights to provide light for the interior.



Floor Plan of Combination Garage and Automobile Sales Building.

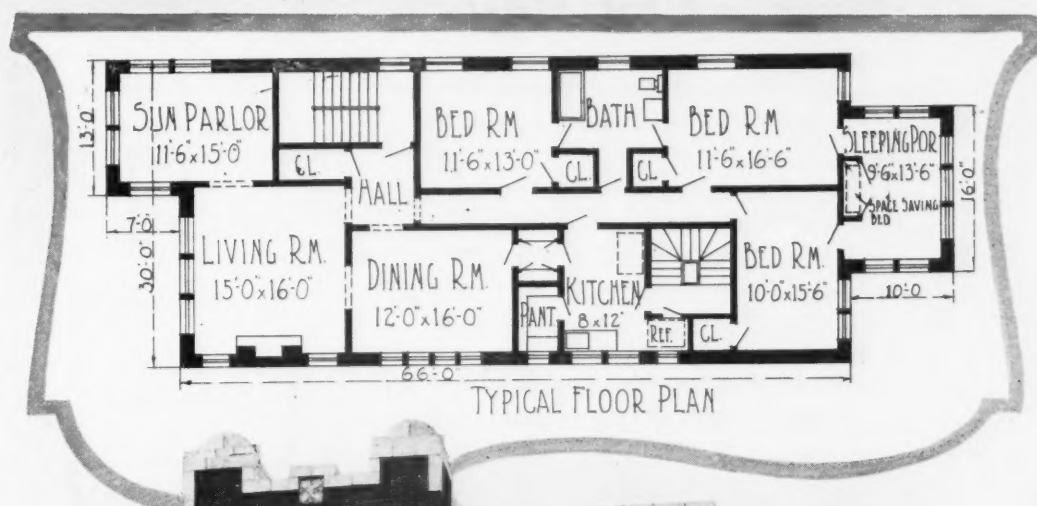


Front Elevation of Building Designed to House the Modern Automobile Sales Agency. Show Room for the Machines, a Salesroom for Accessories, Office and a Large Garage Are Provided in This Building. It Is 75 by 100 Feet in Dimensions, of Brick Construction with a Trussed Roof, and Has an Attractive Front of Face Brick and Terra Cotta.



SIX-ROOM WHITE BUNGALOW. White bungalows make exceptionally attractive homes, and there is a big demand for them. Here is a design for a white bungalow that is good. It has a neat exterior appearance, and the six rooms are well arranged. The dimensions of the bungalow are 26 by 50 feet. It contains living and dining rooms, a library, equipped with a space-saving bed, kitchen and two bedrooms, and the bathroom. How conveniently the rooms are arranged is shown in the floor plan. The garage, following the same architectural lines as the bungalow, is another good feature of this design.

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THREE-FLAT BUILDING OF BRICK AND TERRA COTTA. An exceptional feature of this flat-building is the English basement apartment, which may either be rented, making four income-producing apartments, or set aside for the janitor. The dimensions of the building are 30 by 66 feet. The building is of standard brick construction, set on a concrete foundation. Each apartment contains six rooms, besides a sun parlor, or living porch at the front, and a sleeping porch at the rear. The use of face brick, with elaborate terra cotta trim, makes this an extraordinarily good looking building, such as now are in demand, as they bring high rentals.

Design for an Apartment Building, with Two-Flat Units

BRICK AND TERRA COTTA BUILDINGS APPEAL TO HIGH-CLASS TENANTS

GETTING away from the stereotyped appearance of apartment buildings and designing structures that will give the tenants the conveniences of an apartment with the exterior appearance of a private home are what the present-day architects have done and done well. Here is an apartment building, built in units of two apartments, that was designed by William Earl Russ, Indianapolis architect, and erected in that city by M. M. Bachelder.

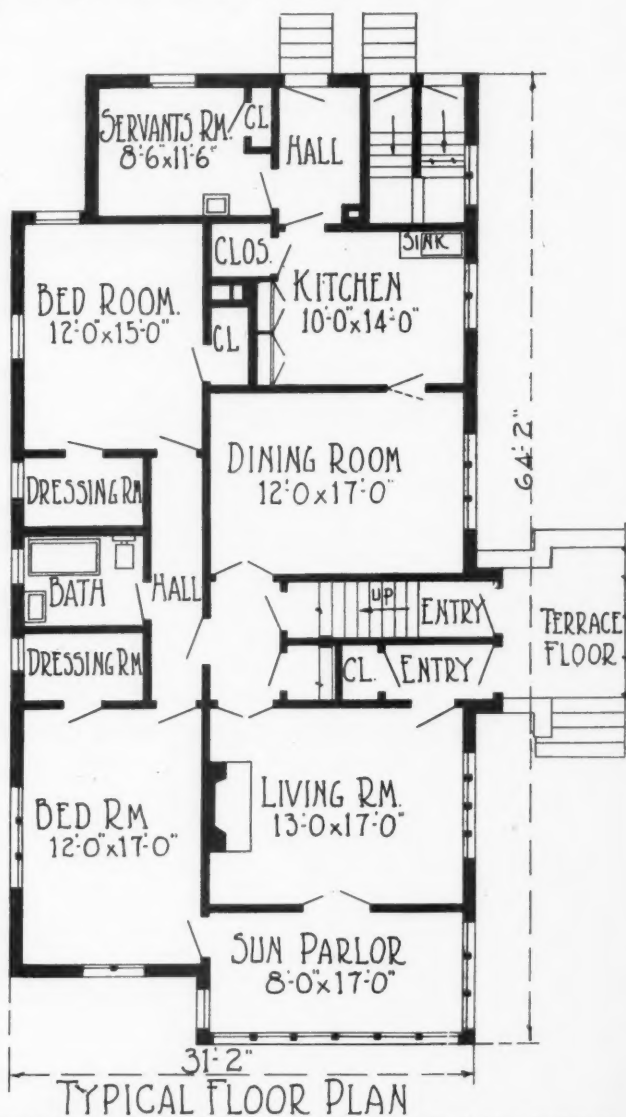
In the adjoining column is shown a typical floor plan of the apartments in this building. Each apartment contains six rooms, bath and a good-sized sun parlor, or living porch. Entrance to all of the apartments is at the side. The room arrangement and the sizes of the rooms are shown on the floor plan.

But it is the exterior appearance of these apartments that distinguishes them. The buildings are of brick construction on a concrete foundation. The basement and side walls are veneered with face brick to the second story sill, and above that are stuccoed in panels. Casement windows are used thruout the buildings, with the exception of the smaller windows in the kitchen and in the walls that enclose the rear stairs. Tile or concrete were used on the roofs.

This type of apartment building brings the owner high rents, as it attracts the most desirable tenants.



BECAUSE of the need of homes many contractors have forgotten that it was farm building that kept the wolf from the door during the war. The farm field now is better than ever before and farmers are building more and better buildings. The only difference is that we do not hear so much about farm building now as formerly.

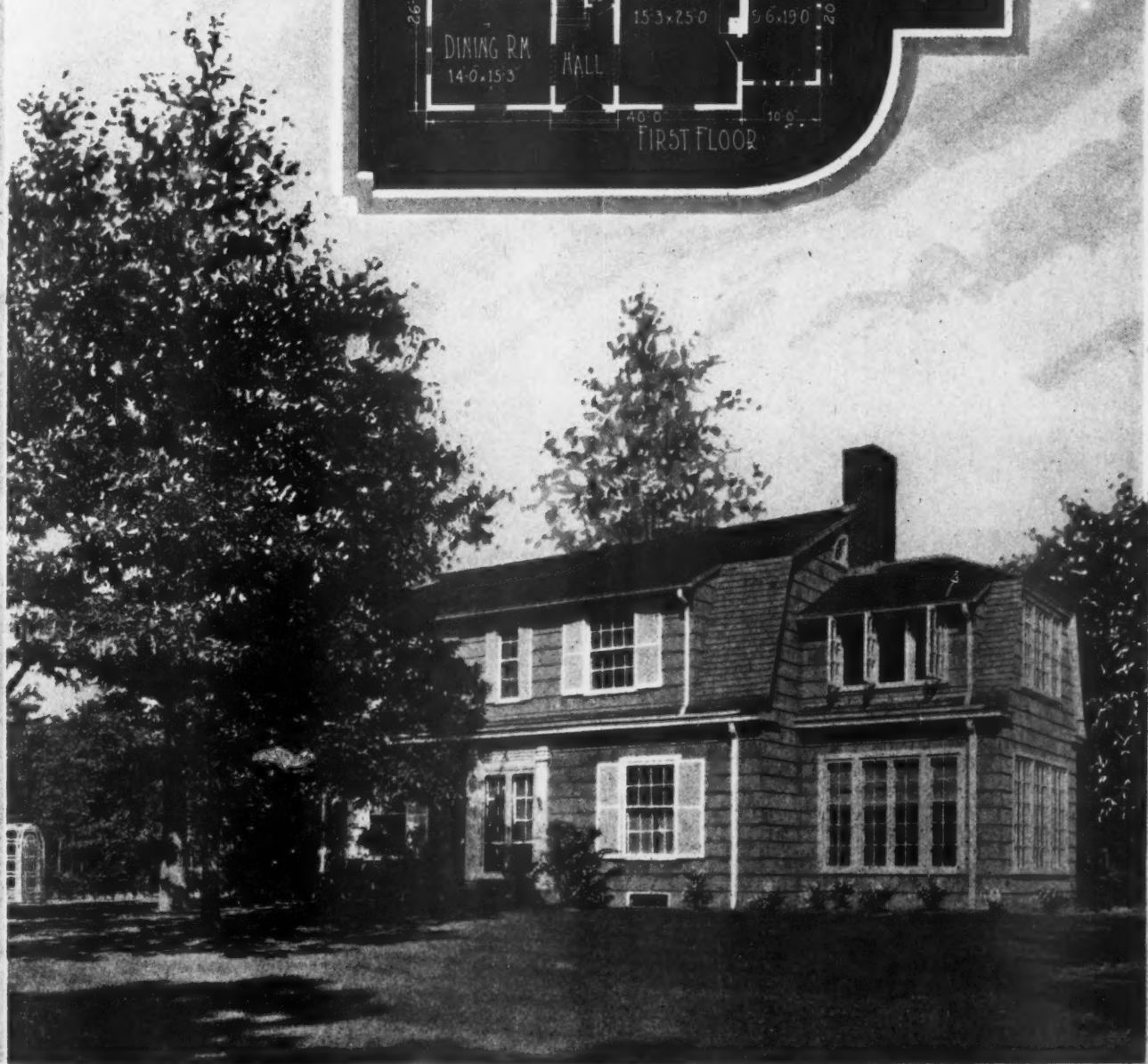
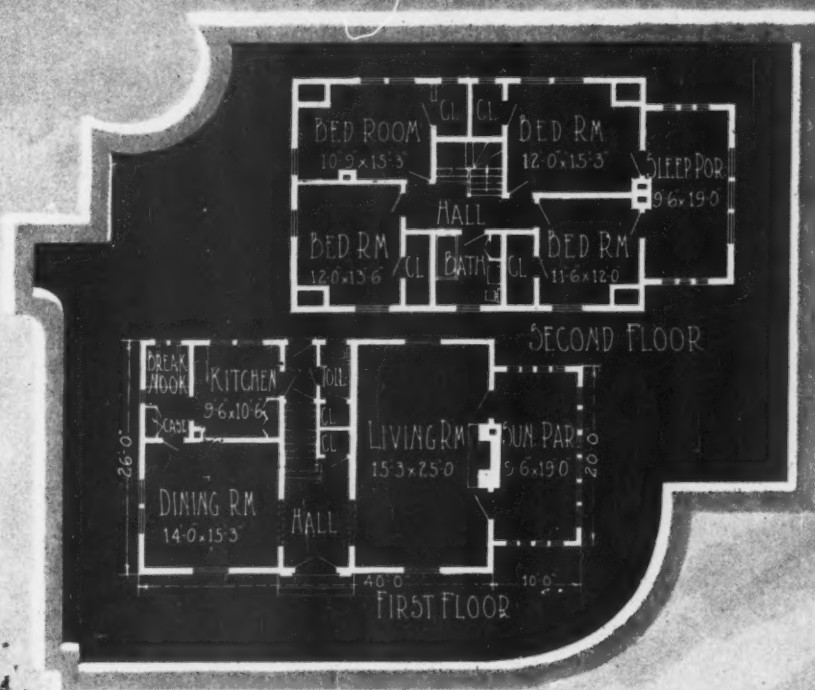


Typical Floor Plans of the Apartments in the Bachelder Buildings.

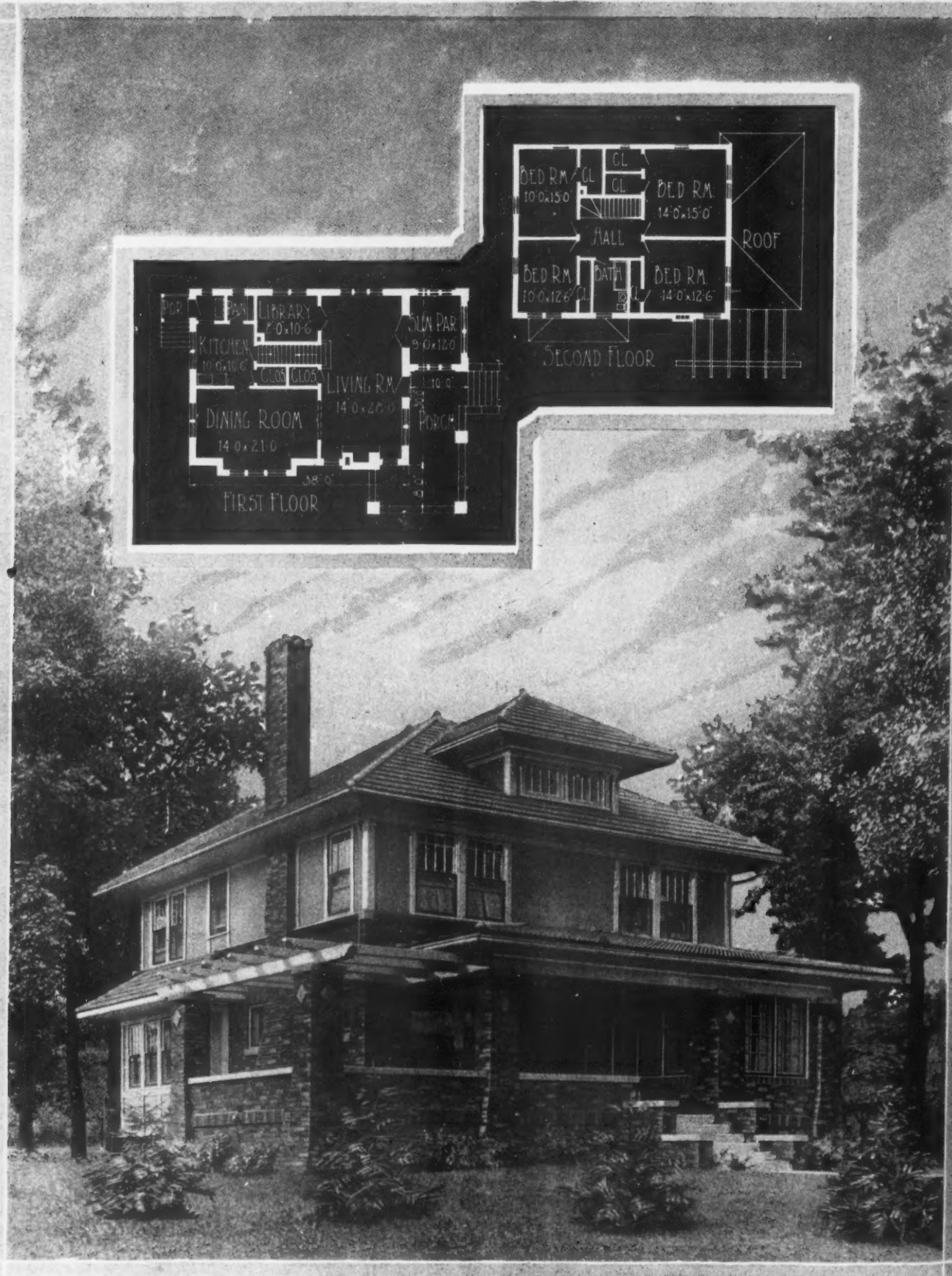


Bachelder Apartment Building, Indianapolis, Designed by William Earl Russ, Architect, of the Same City. The Exterior of These Units Are Strong Features of the Design, Giving us They Do the Appearance of Private Homes.

S
parlor,
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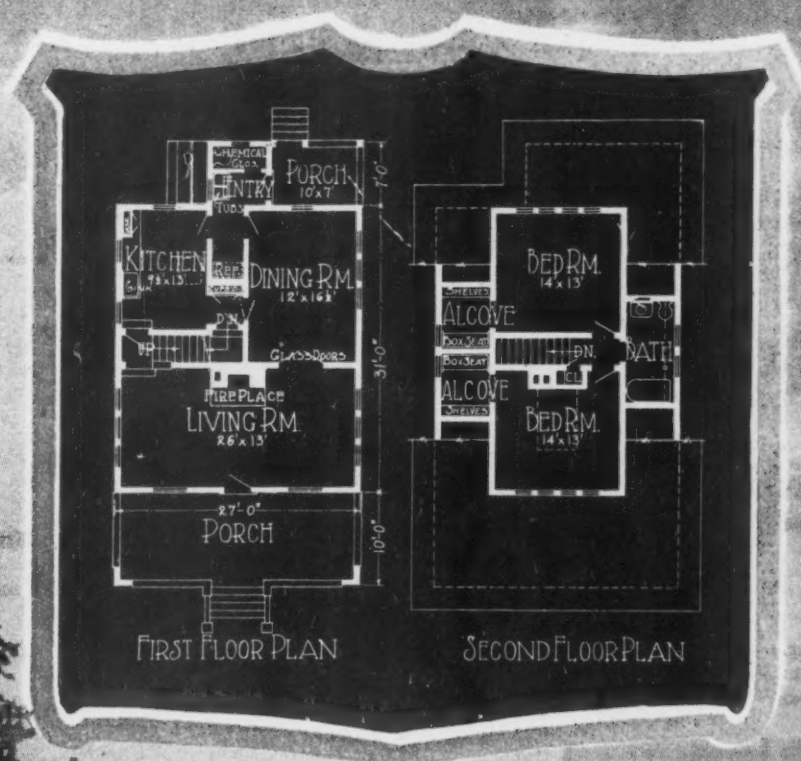


S EVEN-ROOM DUTCH COLONIAL HOUSE. The Dutch Colonial is an exceedingly popular type of architecture. The design shown here is excellent, as it provides a most modern home, with a graceful, attractive exterior and large rooms, arranged for comfort and convenience. In addition to the seven rooms, there are a large sun parlor, 9 feet, 6 inches, by 19 feet, and a sleeping porch above it of the same size. The dimensions of the house are 40 by 26 feet, with an additional 10 feet for the porch. The balance of the Colonial is retained, the entrance hall being in the center of the house, with the large living room, 15 feet, 3 inches, by 25 feet, on one side, and dining room and kitchen on the other. Upstairs are four bedrooms and bath.

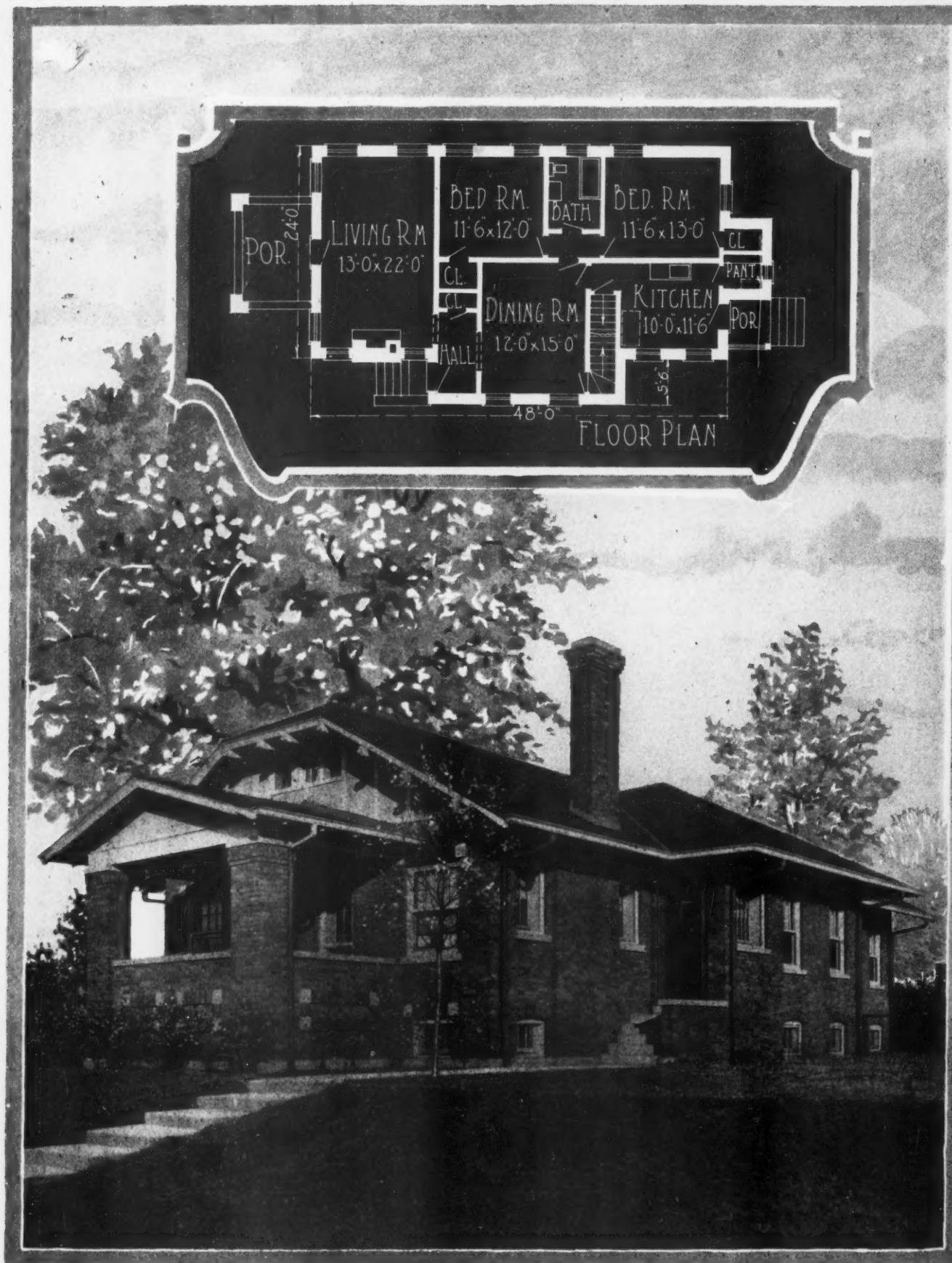


EIGHT-ROOM BRICK AND STUCCO HOUSE. What an exceptional home the addition of the brick pillared porch, the pergola, and sun parlor make is shown in the perspective. The main portion of the house is rectangular, being 38 by 30 feet, but the hip-roof and porch give it a most attractive exterior appearance. The house contains eight rooms, sun parlor and bathroom. The room arrangement is excellent. The large living room and dining room; the small library or den, and the kitchen on the first floor, and the four bedrooms on the second; all are planned for the comfort and convenience of the owner. This house may be constructed either of solid brick, with face brick to the second floor sill, and stucco above, or of frame with veneer walls.

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STORY-AND-A-HALF HOUSE OF FIVE ROOMS. Here is the type of story-and-a-half house that is being built extensively. It has a fine exterior, the long sweep of the roof overhanging the porch, and the gabled dormer, coupled with the broad porch, making it a beauty. The dimensions are only 27 by 31 feet, exclusive of the 10-foot porch projection. On the first floor are a living room, 26 by 13 feet, dining room, 12 by 16 feet, 6 inches, and kitchen. Two bedrooms, each 14 by 13 feet, with good-sized alcoves off of them, and the bathroom are on the second floor. Note by the floor plans how convenient is the arrangement of these rooms, a feature that will appeal to the women members of the families of prospective builders.



N ARROW LOT, 5-ROOM BRICK BUNGALOW. This is the type of home that city builders are erecting extensively. Because of its width—24 feet—it will go on a narrow, inexpensive lot, while at the same time it provides a home that is convenient, and warm in winter and cool in summer. The depth of the house is 48 feet. It is of standard brick construction, with stucco on the outside attic wall. The break in the straight wall for the entrance and the porch make this design out of the ordinary for a home like this. The floor plan shows a large living room, 22 by 13 feet, dining room, kitchen, two bedrooms and bath. This design will be found exceedingly useful by city builders.

How I Came to Specialize in Standard Store Front Installation

SUCCESSFUL CONTRACTOR REVEALS SOME OF THE SECRETS OF HIS SUCCESS IN USING FACTORY MADE MATERIALS

NOTE—Knowing that there are many contractors who build business buildings who are making a nice profit and, at the same time, are giving their clients the utmost in satisfaction by installing standard store fronts, the AMERICAN BUILDER asked one of them to tell, for the benefit of its readers, something about his experience. Here is his story.—THE EDITOR.

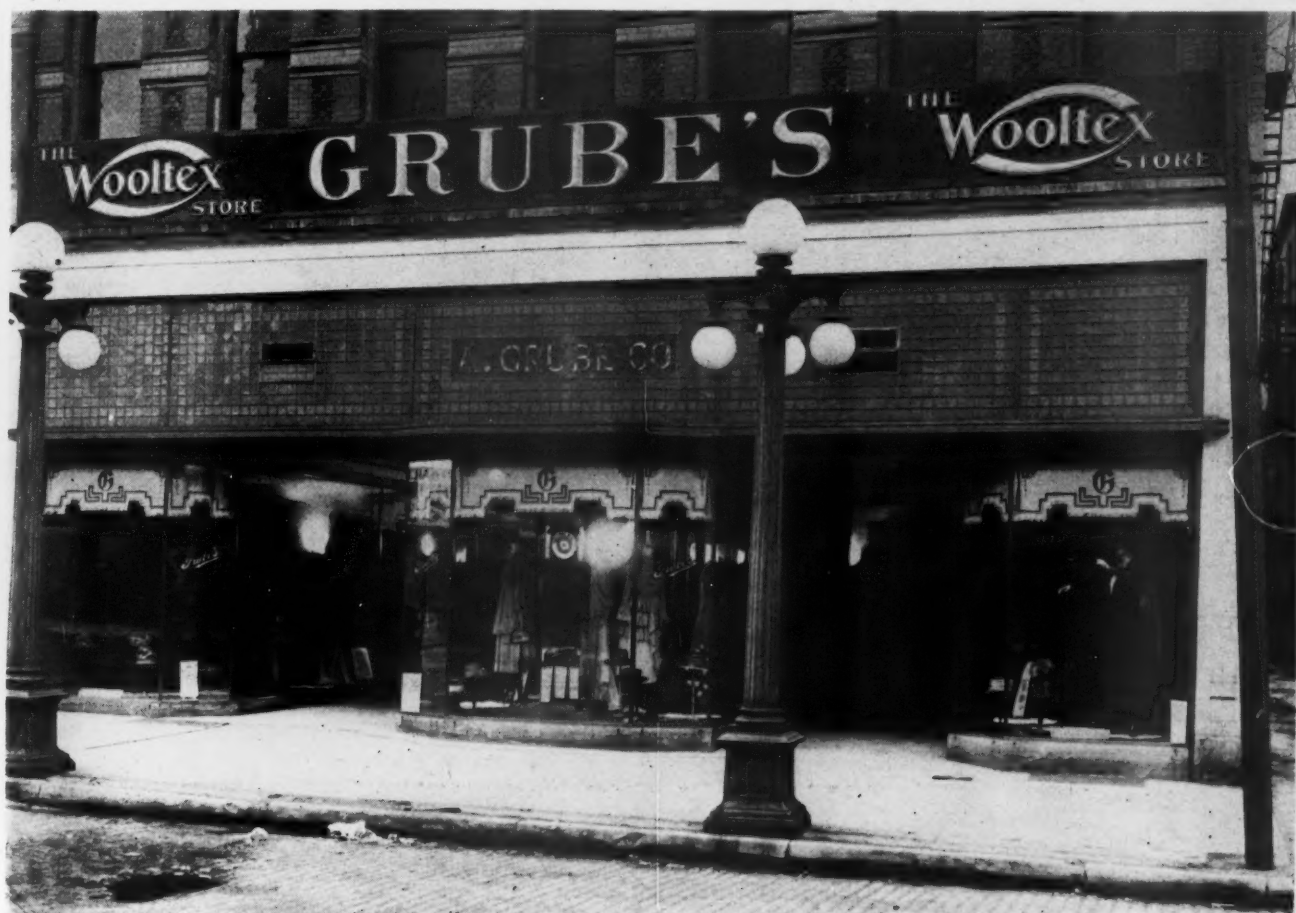
"IT is not an easy matter for a contractor, such as I am, to write for a magazine, especially when he is asked to tell the whys and wherefores of his business. But it has seemed to me for several years that others in the same line of business that I am in have been overlooking a profitable opportunity. So, if the story of my experience will help them become more successful than they are now, and also give them the courage to take bigger contracts, such as erecting business buildings, I am glad of the opportunity offered me by the Editor of the AMERICAN BUILDER.

"Early in my experience with business buildings, I realized that the front of the store is really one of the most important things about the building. Given

an attractive front, with windows unobstructed by posts, or heavy mouldings between the window panes, a merchant can get a bigger and better display of his merchandise and will be more pleased with his new building.

"To get such a front into a store required a whole lot of study. There were new methods being devised to accomplish this result 'every day,' to use a familiar term, and to keep up with the procession I had to watch developments pretty closely. In keeping up to date on store front construction I became convinced that this part of the building required the services of specialists in that line. And, luckily for me, I got in touch with some of these specialists.

"There is a great deal of difference—and I know there are hundreds of contractors, handling both large and small business building projects, who will agree with me—between designing the front of a store, and having an expert do it for you. And it is especially easy for the contractor when these same specialists will not only design the front, but supply you with the materials required, all cut to proper lengths, together with plans showing how they should be installed.



An Excellent Example of Modern Store Front Construction. Not Only Are the Windows Unobstructed, Well-Ventilated and Well-Drained, but Above Prism Glass Aids Materially in Daylighting the Store.



Front of the J. M. Perry Drug Store as It Appeared Before a Modern Store Front Was Installed.

Store Front Construction Made Easy for the Contractor

"That is what decided me to turn over this part of the work to men who did nothing else but design store fronts, and specify the materials that were to be used in them. And from that time on I have had the satisfaction of knowing that my clients were getting the very latest ideas in store front construction; the display windows that were best suited to their needs, and fronts that attract customers to their establishments.

"I will not attempt to go into detail regarding the service that these designers of store fronts furnish contractors, neither will I attempt to advise contractors about who makes the best fronts, altho, I believe, the ones I am dealing with do, but the fact that I want to impress is that when specialists are at hand ready to lend contractors the benefits of their experience in this



Showing the Transformation of the J. M. Perry Drug Store Made by the Installation of a Modern Front. Were It Not for the Name on the Window, the Old Building Could Not Be Recognized in the Picture.

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Another Type of Modern Store Front Construction. Entrances at Each Side Give Patrons of the Store a Front and Rear View of the Central Window, and Also Allow for Good Displays of Merchandise on Either Side. The Terra Cotta Trim Adds to the Attractiveness of This Front.

line and it is wise to take advantage of the opportunity.

"One of the first jobs of this kind I had was the remodeling of the front of a brick business block—one of the type that was commonly built many years ago, and was built well. The front was anything but attractive—in fact, it was the opposite. The entrance to the stores on the first floor of this building was up two steps; the bottoms of the windows were much higher than the sidewalk level. Not only this, but the lower half of the window was not used, being paneled with wood. By this old-fashioned method of store front construction half the value of the windows was lost to the store occupants.

"Here was a problem. I had seen many modern store fronts, but I was not familiar with the methods used in constructing these fronts. I knew that the floors of the display windows should not be much above the level of the floor of the stores themselves. I also knew that narrow moulding was used to hold the glass in place and that the glass had to be held in such a way that the contraction and expansion in cold and hot weather was allowed for. One of the important things that I did not know was that to make a window a success proper ventilation must be provided.

The Advantages of Installing Standard Fronts

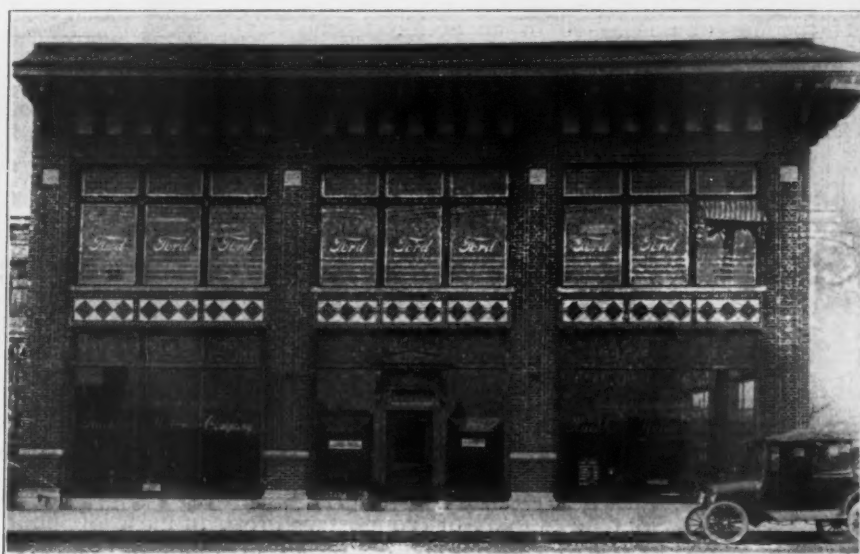
"It was when I got this remodeling job that I began to investigate store front construction. And in investigating I came to know that there are several large and responsible concerns that make a business of designing store fronts and furnishing contractors with the materials, dimensioned to fit each individual job and accompanied by blue prints showing contractors how the materials should be installed.

"That was good news to me, and I at once got in touch with the con-

cern with which I have since been doing business. The designing department furnished me with suggestions; I showed them to my client; one was accepted; the materials and plans arrived promptly and I did the installation. And best of all I found after the work was done that it was better and more profitable to me than to furnish the materials myself.

"Since that time I have installed many store fronts, both in new construction and in remodeling old buildings. I also have put in many styles of fronts, with various kinds of display windows. All have proven satisfactory to my clients and I have made good profits on every job, which is something few contractors can say about the various building contracts they have handled.

"I believe if contractors, that is those who are erecting business buildings, knew how much more satisfactory it is to install standard store fronts, rather than to try and design and build the fronts themselves, there would be a great deal more of them handling this sort of work. Also there would be no 'kicks' about the fronts after they are put in."



Standard Store Fronts Are Used for Automobile Salesrooms. They Give Opportunity to Use Large Plate Glass Windows, so That Views of the Cars on the Salesroom Floor Are Unobstructed.

Gas Increases Desirability of Buildings

MANY CONVENIENCES AND COMFORTS OBTAINED BY HAVING AUXILIARY HEATING AND LIGHTING SERVICE

By R. S. Doull

SIX HUNDRED THOUSAND new houses are required in the United States each year to replace those burned or scrapped, and to house our normal increase in population. We build in normal times each year public buildings, office and business structures, factories, stores and homes to the amount of billions of dollars. Now in 1919, one million six hundred thousand new dwellings are needed at once and public and business enterprises are demanding adequate quarters and the demand cannot be met. We are two or three years behind in our building program.



Gas in the Home Permits the Installation of Heaters That Radiate Warmth and Make the Home Cozy.

A national campaign has started to speed up building construction and bankers and loan associations are formulating plans to assist owners in financing their prospects.

The time has come when owners will ask architects, contractors and builders upon

whom they naturally rely to make their building investments produce the best returns:

"What do you intend doing to make my building not only architecturally and constructionally correct, but thoroly efficient to meet any and all demands that may be made upon it now and in the future, thus adding to its desirability and attractiveness from a rental standpoint?"

If the question is asked of an architect who has

had considerable experience in designing commercial buildings, he will readily make answer:

"I am going to provide a complete and adequate gas supply service for your building, a service that will greatly add to the rental opportunity of your structure, because it will be equipped in a manner to meet the de-



Hot Water Heaters Provide Hot Water at All Hours. They Are Made Possible by Gas and Use Little of It to Keep the Tank Filled with Heated Water.

mand of any person whose business requires a fuel service and those industries constitute nearly 90 per cent of the business world, you will be able to lease your premises at any time to any desirable tenant."



There Is Nothing More Handy for the Laundry Than a Gas Stove, on Which to Boil the Clothes.

The Advantages of Piping a Building for Gas

Gas, because of its flexibility, its cleanliness, its reliability of supply, its ease of control, its operating speed, which means increased production, its safety from a fire hazard standpoint, its small operating cost and space economy, makes it pre-eminently the

desirable fuel to use, and industries thruout the country in every line of business are more and more realizing its many advantages and will seek quarters only in buildings where a full and ample supply can be obtained. The cost of adequately piping a structure for gas during construction is negligible compared to the cost of the building.

To pipe a building after it is completed, in order to secure a desirable tenant who requires a fuel service, will cost practically three times more than

it would have cost if originally done, aside from the fact that the piping must necessarily be exposed, and be an eye-sore ever afterwards.

Pointers on Piping a Building

In piping structures, care should be taken to install the risers and branch lines of a size adequate to supply the maximum quantity of gas that may be required to meet the future needs of tenants. It is a false economy to consider that an inch and one-half riser will be sufficient to meet all demands when, as in most loft buildings, a three-inch riser, or two risers having joint carrying capacity of a three-inch riser is required. A three-inch riser has five and sixty-six one-hundredths times the carrying capacity of an



A Mangle, Heated with Gas, Does Away with Much of the Labor of Ironing the Flat Clothes.

inch-and-one-half riser and the cost between the two is so slight to consider in view of the increased efficiency obtained.

Next in importance to the riser is the question of the number and size of the gas outlets. These outlets should be placed in every room of a building and be of the same size as the riser.

No one can foresee to what use a room may be put and the very room which it may be reasonably expected will not require a fuel service may be the very room in which a tenant may need such service in his industry.

If the outlets are of the size of the riser, the tenant can obtain the maximum carrying capacity of the riser, if his business requires it, and if a lesser quantity is needed a reducer can readily be attached to the line.

Gas as an Auxiliary to the Heating Plant

The winter of 1917-1918, accompanied by the coal shortage, has demonstrated the necessity of providing some auxiliary method of heating the homes of the people.

The subject is well worth the careful attention of architects and building contractors, because of the acknowledged shortage of the coal supply during the coming winter. If branch lines are run from the kitchen riser to properly located baseboard outlets, in each room during the construction of apartments and dwellings, the occupants will have the facility to heat their homes in severe weather when a coal shortage occurs, or when there is an interruption in the central heating plant service.

Apartment house owners should recognize the advantages of equipping every apartment in this manner, thus avoiding the frequency of complaints of lack of heat by tenants; besides there would be economy in the saving of coal during the early and late months of the year when the temperature is not low enough to warrant the starting up of the general house heating plant, but some

heat is demanded by the tenants.

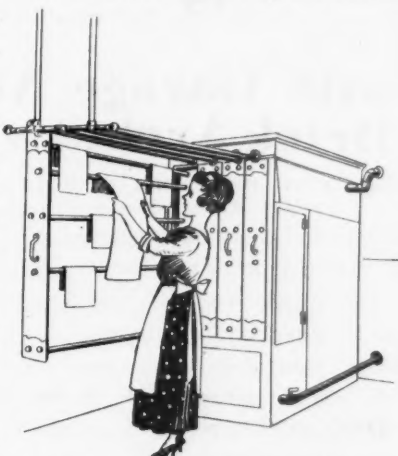
When architects and building contractors are in doubt as to the size and number of the risers and branch lines to install to furnish the required service in a building under construction or alteration, the information should be obtained from the gas company.

Nearly every company has a bureau for this purpose whose expert service can be gratuitously obtained.

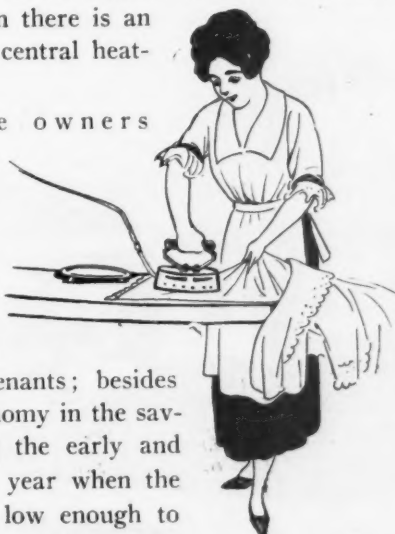
They will gladly make the gas layout upon the architects' plans, if requested to do so, and give them the full benefit of their latest scientific investigations and experiments in space and water heating, and in industrial and domestic appliances. Many architects and building contractors avail themselves of this service greatly to the benefit of their clients.



When It Comes to Cooking, the Gas Stove Is Without a Peer. Another Convenience in the Home That Has Gas.



Bad Weather Does Not Hinder on Washday in the Home Piped for Gas. The Dryer Takes the Place of Sunshine, Winter or Summer.



A Gas Iron Is Useful for the Delicate Clothes.

Hospitable Entrances

The door shuts us off from that world—that possesses the power to impress or depress the casual caller, or friend—should be given attention at frequent intervals so that it will bespeak the hospitality that we ourselves extend.

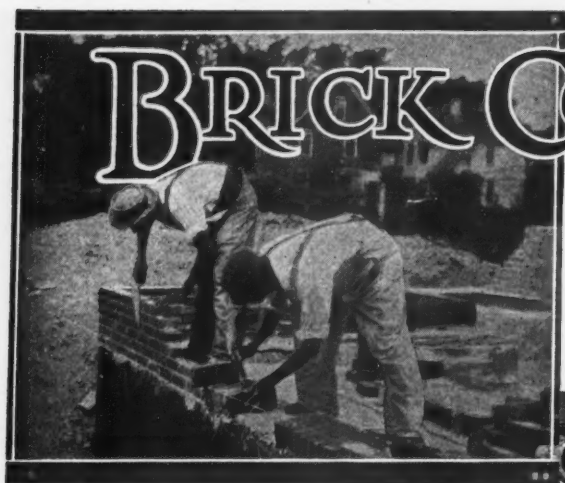
It is the entrance to our home that attracts first attention and by its appearance, the interior is judged. While its appearance may not in any way affect our comfort, yet it should be given a thought now and then from the standpoint of the outsider.

Time and the elements serve to play havoc with the appearance of the entrance—the enamel, paint, or varnish has done its part faithfully, but reinforcements are sure to be needed at intervals of two or three years.

The Colonial house with its entrance of white or ivory enamel should be given a fresh coat, which will cheer up the whole house and accentuate the simple yet dignified ornaments. If the door is finished in mahogany, a coat of spar varnish will withstand the weather and add a fresh and bright appearance.



Professional Men Want Gas in Their Offices for Various Purposes. Doctors, Dentists and Men in Other Professions Require Gas in the Buildings They Occupy.



BRICK CONSTRUCTION

for Modern Carpenters and Builders



Seven-Room Residence, with Garage Attached— How to Lay Up Brick Arches

C. C. MUMMERT, ALLIANCE, O., CONTRACTOR, BUILDS FINE HOME FOR HIMSELF AND FAMILY.

AT the bottom of this page is shown the new brick home, with two-car garage attached, of C. C. Mummert, enterprising contractor and builder, of Alliance, Ohio. Mr. Mummert not only built this home, but designed it himself, and at the request of the *AMERICAN BUILDER* has furnished the floor plans of the house, which are reproduced on the following page.

The house is 30 by 30 feet in dimensions, of standard brick construction, set on a concrete foundation. Altho the dimensions given indicate a square house, the illustration shows how well Mr. Mummert planned it to take away the "square" effect. The wide porch, set into the corner of the house accomplishes the result noted. The garage is for two cars, which Mr. Mum-

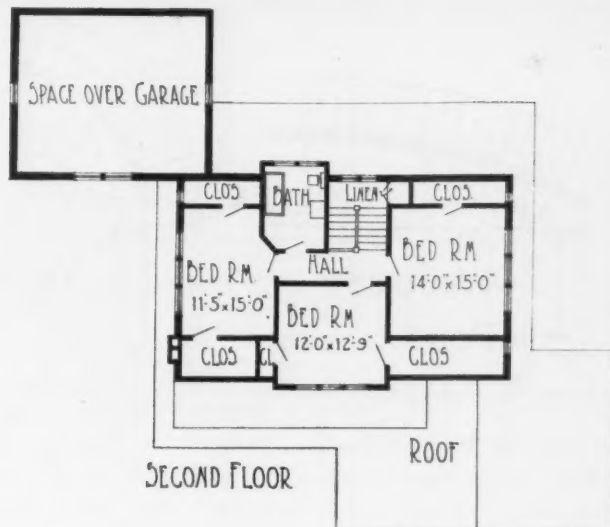
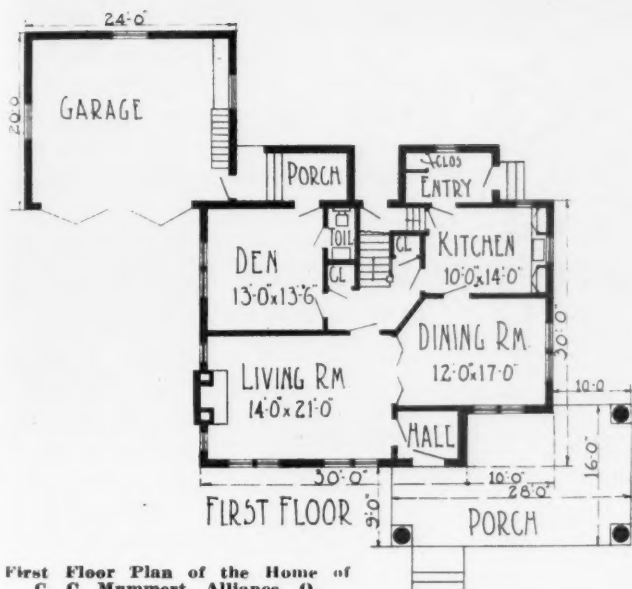
mert employs in his business.

Four of the seven rooms are on the first floor, and three on the second. The floor plans show how well the rooms have been arranged, the entrance being into a hall that leads into a good-sized living room, 21 by 14 feet 6 inches. The dining room also faces the porch, and is shut off from the living room by double accordion doors. This room is 17 by 12 feet. The kitchen is back of the dining room, and across a hall from the kitchen is a den, also of good size. It will be noted that the den opens to a rear porch, which leads into the garage.

On the second floor there are three bedrooms and bath. A feature of the plan is the number of closets shown.



The Fine Seven-Room Brick Residence, with Garage Attached, of C. C. Mummert, at Alliance, O. Mr. Mummert, a Contractor and Builder, Designed and Erected This Home for Himself. Floor Plans of the House Appear on the Following Page.



Second Floor Plan of C. C. Mummert's Home.

Segmental Arches in Brick Walls

The word "segment" means a portion of a circle; in fact, any arch that is less than a semi-circle is properly termed a "segmental" arch. The most common use of the segmental arch is as a relieving arch over the lintel of an opening for a door or window in a brick wall. In such cases, no better proportion can be taken than one-sixth of a circle. There is however, an important point of construction involved, and one that is often neglected.

There are right and wrong ways of building relieving arches. The arch always should spring from a point over the extreme end of the wooden lintel. This will prevent, in case of fire and the consequent burning of the lintel, the failure of the arch, which would endanger the whole wall above. Instead of making the span of the relieving arch equal to the openings between the jambs below, the arch starts at a point beyond the end of the lintel and in case of fire it will be unaffected and will continue to carry the weight above it. This right method costs no more than the wrong one, and the advantages are greatly in its favor.

Of course, for such arches no elaborate centering is necessary. The lintel is laid in position; and a piece of one and one-half inch stuff is shaped to the curve of the arch, and laid upon the lintel to form the centering. The arch then is turned upon this centering, which is removed when the mortar is properly set, the core then being filled with brickwork.

For openings up to three feet, a relieving arch of a single ring of bricks is sufficient; but for larger openings several rings should be used. In an arch of three rings each arch is separate. The bricks of these rough relieving arches are not cut tapering, and

the joints are slightly more open at the back of the arch than on the under side.

Method of Laying Out Arches

The chief problem that will confront the practical man who lays out arches is in connection with the use

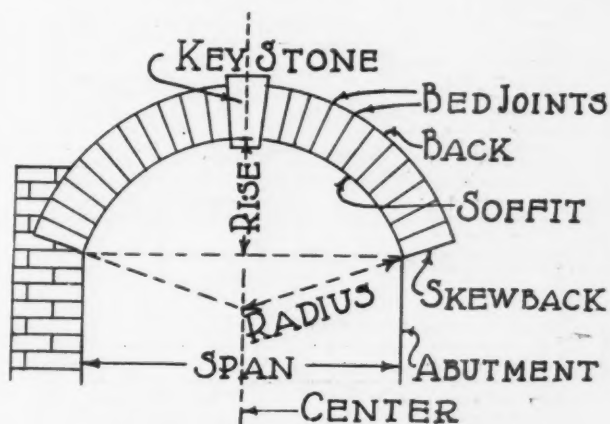
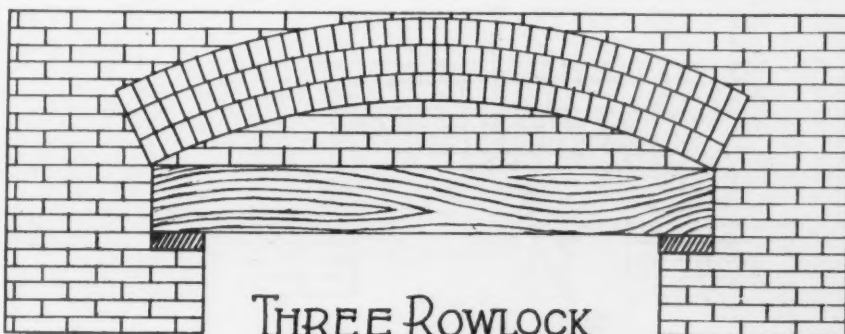


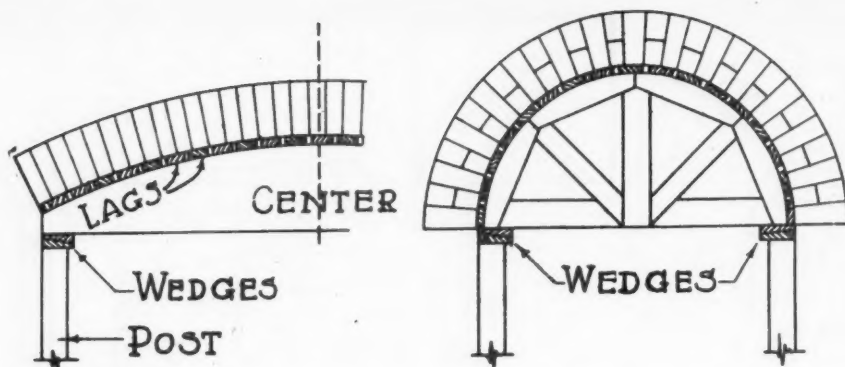
Diagram Giving the Proper Names for the Various Parts of a Brick Arch.

of fine pressed brick. While the mere curve is sufficient for practical purposes in the rough relieving arches, the arch made of face brick and forming a decorative feature of some fine building front, must



THREE ROWLOCK RELIEVING ARCH

A Segmental Brick Arch Having Three Rowlocks.



Showing the Wooden Falsework Used to Support the Bricks of an Arch While It Is Being Built.

be set out exactly for the purpose of cutting and fitting, or perhaps molding, the bricks of which it is composed. Brick arches in which the bricks have been specially cut or molded are termed gauged arches, and are frequently used in the better class of buildings.

The radius of fan arch is rarely given by the architect, the rise being almost invariably denoted instead. This means that the layer-out has to find the centers of several curves from the given perpendiculars of their rise and span. This is done by laying the steel

square on a line drawn from the spring and of the arch to the highest point, which is at the center, and drawing diagonal lines, which at the point where they cross, give the center of the circle, of which the curve of the arch is a segment. A nail is driven at this point and a string which reaches to the high center point of the arch is used to get the curve.

As the bricks in gauged arches are used full length the thickness

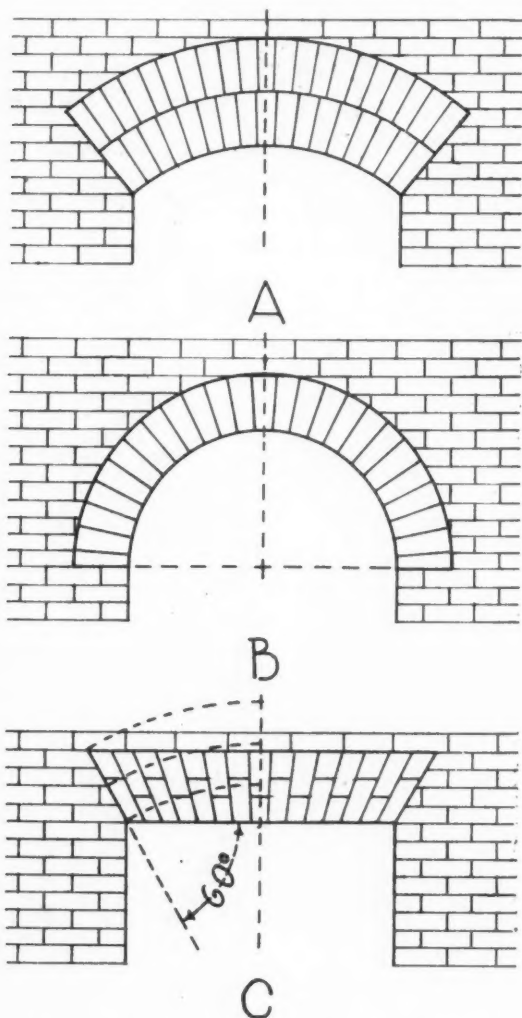
of the brick is marked off around the back of the arch, and the joints drawn to the center. The joints are very fine, it usually being specified that they shall not be more than one-eighth inch, the mortar being of either fine cement or lime putty.

Flat arches are much used, especially in buildings in cities. They present no difficulty to the layer-out, the joints being found by making a curve above the arch and stepping off the thickness of the bricks upon it. There is one important point, however, to be remembered. That a perfectly straight soffit will always appear to be sagging. The remedy for this is to allow a trifling rise of perhaps one-half inch to every three feet of span. This will be sufficient to make the under side of the arch look straight. This can be done easily on the job by laying two strips tapering from nothing at the ends to the required thickness at the middle, upon the support or centering upon which the mason forms his arch.

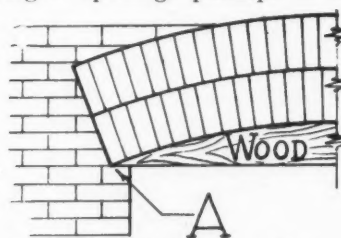
Of course flat arches are not very desirable from a structural standpoint and should not be used for spans of more than four or five feet. Occasionally, for the sake of uniformity, a flat arch is used over a larger opening, perhaps a broad window or doorway,

but in such cases the weight of the superstructure is carried on iron girders, and the brick arch is only a sham or casing toward the street.

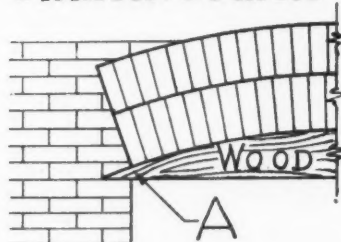
As has been repeatedly said, brickwork endures only according to the strength of the bricks and the mortar with which they are laid up. This is especially true of arches, and the greatest care should be used in getting mortar of strength and quality. It's the joints that fail.



Construction of Brick Arches. Fig. A, Segmental Arch, with Two Rowlock Arch, Used in Common Work. Fig. B, Segmental Arch Formed of Bricks Rubbed or Cut to Required Shape. Fig. C, Flat Arch Composed of Bricks Rubbed or Cut.

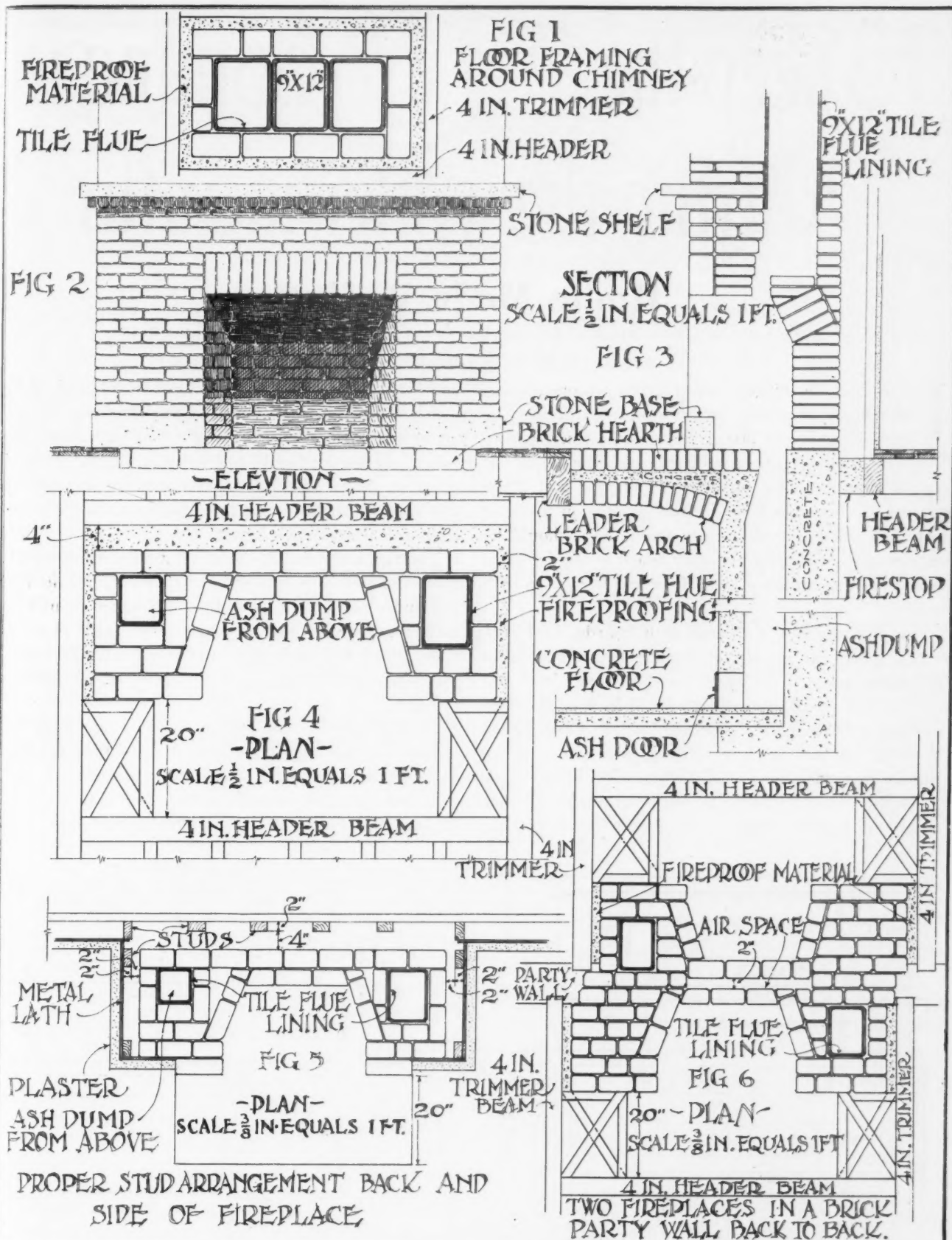


CORRECT WAY OF STARTING ARCH



WRONG WAY OF STARTING ARCH

Right and Wrong Ways of Constructing a Brick Arch.



FIREPLACE CONSTRUCTION FOR A ONE OR TWO FAMILY HOUSE

To keep the coming in during the winter months

Home Made Buffet

DESIGNS FOR GOOD FURNITURE, TO BE BUILT IN THE SHOP AT ODD TIMES

By C. J. EMMERT

IN making the buffet shown in the accompanying sketch, cypress was used thruout, excepting the back where wall board was used, which makes it several pounds lighter. First, make the posts, by sawing four 2 by 2's into 43-inch lengths, and make grooves as shown in Fig. 1. The grooves in the rear posts and the back-side of the front posts should be large enough to allow a half-inch board to slip in. The two remaining grooves should be cut for a $\frac{5}{8}$ -inch board.

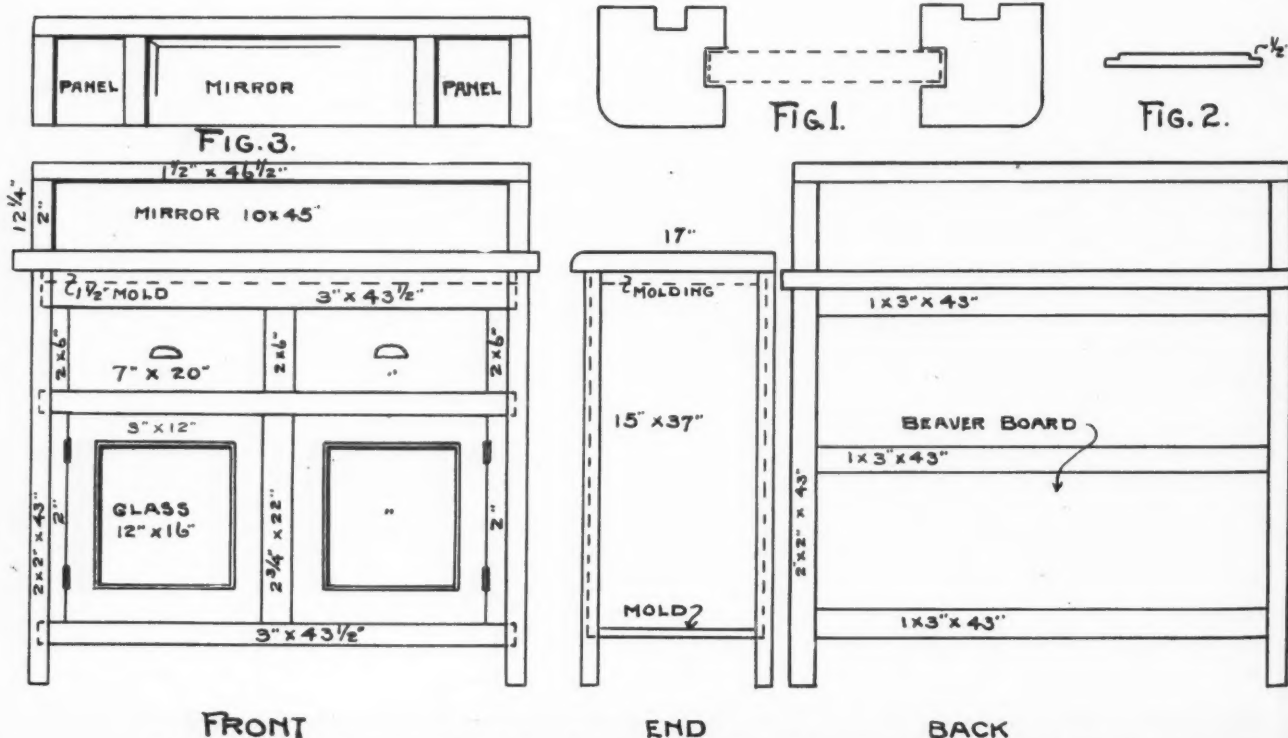
The end panels are of half-inch boards, 15 by 37 inches, which are glued and fitted into the grooves in the corner posts. The wall board is next glued and fitted into the back grooves and the brace boards nailed to posts with tenpenny finishing nails. Then fasten the front together by slipping the 3-inch bottom board (shown in front view) into the groove 6 inches from the bottom, then a 1 by 15 by 44 $\frac{1}{2}$ -inch board to form bottom of buffet. The middle 3-inch board is next

glued and fitted, and lastly, the top 3-inch board. After this is done, the small pieces at the ends and between drawers and doors are to be glued in place, and "toenailed" from the inside to secure strength. Glue, in all cases, should be spread as thinly as possible, and the first coat allowed to dry a few minutes, then the second coat will always stick better.

The top, which is 1 by 18 by 50 inches, is put on with glue, and two finishing nails in each end, put in from the under side. The moulding will cover them when finished. The drawers are just boxes made to fit the opening, of half-inch stuff, the front cut with a half-inch lip, as shown in Fig. 2, and finished with drawer pulls.

A shelf can be put in the lower part if desired. Braces for this should be small strips nailed from the front to the rear posts.

Doors are put together with glue, and when the glass and moulding are put in they are strong enough



Elevations and Details of a Good Buffet, Showing Dimensions of Lumber and Construction Methods.

for any average use about the home.

Mirror is put in, by making grooves in the frame before it is put together. Care should be taken to get the grooves just large enough and no more, but if too large they can be plugged from the back, giving a neat appearance in front. A small mirror was used for the one described by having two extra posts, and using half-inch boards for panels at each side of mirror.

Entire cost of material, including hardware, for this buffet was a little less than \$10.



Designs for Taboret, Book Trough and Magazine Stand, and a Table for Books or Magazines
By JOHN UPTON

THE magazine stand, shown in the accompanying illustration, is of simple construction. It is merely two sides with shelves between them, but by making the sides tapering and cutting a few plain openings in them, a pleasing piece of furniture will result.

The first step is to get out the sides. Then the edges of the openings and the position of the shelves are marked. The shelves may be fastened by wooden dowels; projecting slightly and rounded off, or by round-headed screws, common screws also may be used, but the holes should be fitted with a plug. In making the openings, holes are bored near each corner, but inside the lines. The sawing always is done from the outside face. The two boards forming the trough at the top should have a small space left between them, so that dust will fall thru.

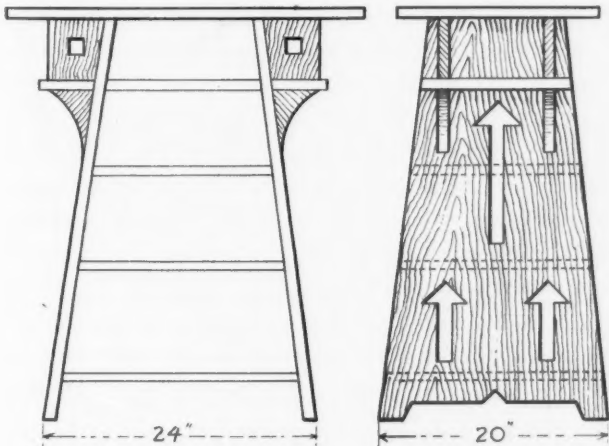
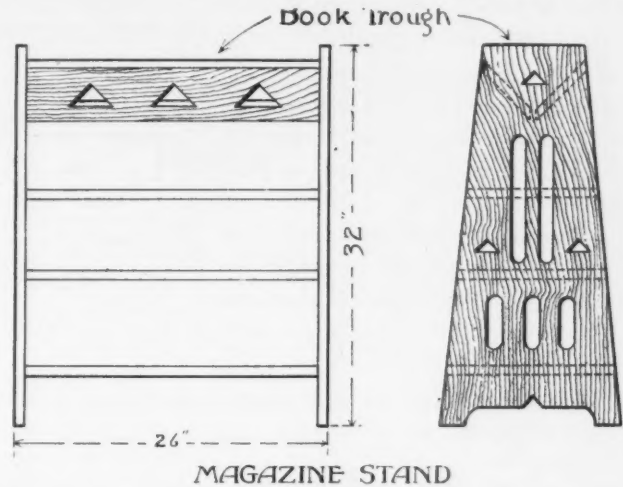


Table for Books or Magazines
Front and End Elevations of Table for Books and Magazines.

The table is a little more difficult to make, but is well worth the extra work. Get the sides out first, marking all the openings and cutting the ends to the proper angle. Put the lower shelf in, and then the top.



Magazine and Book Trough, One of the Pieces of Furniture That Is in Demand.

The other shelves are fitted last. The small shelf at each end may be varied to suit.

The little taboret can be changed both in shape and size, and may be made for a plant, or larger to support a phonograph.

In making these articles, one need not follow exactly the designs shown. A little ingenuity will enable the workman to make several different pieces of furniture from the same design. These are suggestions from which the builder may get some ideas.

One familiar with the work will be able to build from these designs.



Design for an Oak Writing Desk
By Frank P. Dufrechou, Jr.

AT the bottom of page 90 is a design for a writing case to be made of oak. All the parts are to be carefully fitted and glued and high-grade hardware is to be used. The lumber required to construct this writing case is as follows:

- 1 Piece 1 by 12 by 3 feet, top.
- 2 Pieces 1 by 12 by 4 feet, sides.
- 1 Piece 1 by 9 by 2 feet 7 inches, bottom of desk.
- 1 Piece 1 by 9 by 2 feet 7 inches, book shelf.
- 2 Pieces 1 by 4 inches by 1 foot 9 inches, front of desk.
- 1 Piece 1 by 4 inches by 2 feet 7 inches, front of desk.
- 1 Piece 1 by 5½ inches by 2 feet 7 inches, front of desk.
- 2 Pieces ¾ by 2½ inches by 1 foot 9 inches, front of desk.
- 2 Pieces 1 by 3 inches by 3 feet 4 inches, strips on back.
- 4 Pieces 1 by 3 by 12 inches, shelves on side of desk.
- 18 Linear feet, ¼ by 6 inches, pigeon holes.
- Back made of pine.
- 11 Pieces ⅞ by 3¼ inches by 3 feet 6 inches, T. & G. ceiling.

Construction Methods

First take the sides and cut bottom as shown in the drawings. Next cut the taper on the front of

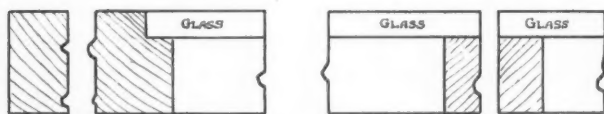
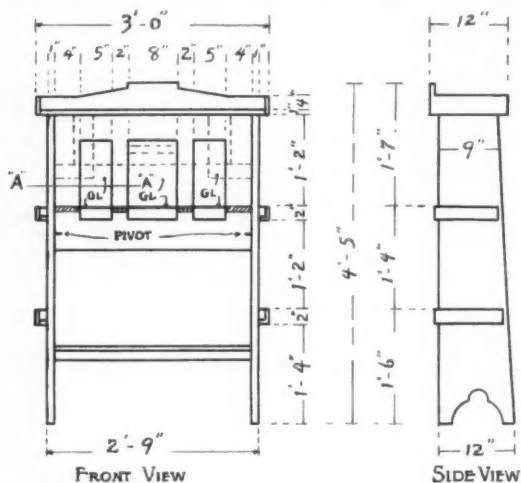
both sides. Select the best surface for the outside, then notch out grooves on the inside to receive bottom of desk and book shelf. Next square the shelf and bottom of desk and place them in position. Now put the top on. You now have the frame built and ready to receive the back. Strips are nailed across the back to strengthen it and to hold the ceiling together.

The front should come next. Cut and fit the material as shown in the drawings. When ready to set the glass in place, brush the edges with glue to hold them rigid when set in place.

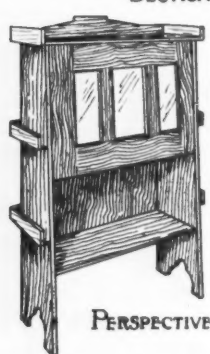
The pigeonholes are arranged as shown and are glued in place.

How to Finish the Desk

To finish, first stain with dark mahogany oil stain. After 20 minutes wipe lightly then let stand for 12 hours. After 12 hours give a coat of mahogany coater. Let this stand for five hours, then give one coat of elastic. Let this stand for 48 hours. After

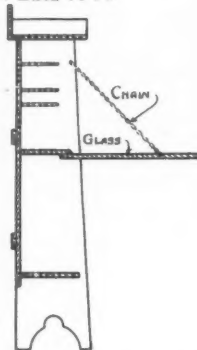


SECTION THROUGH FRONT ON LINE "A-A"



PERSPECTIVE

DETAILS OF
WRITING DESK

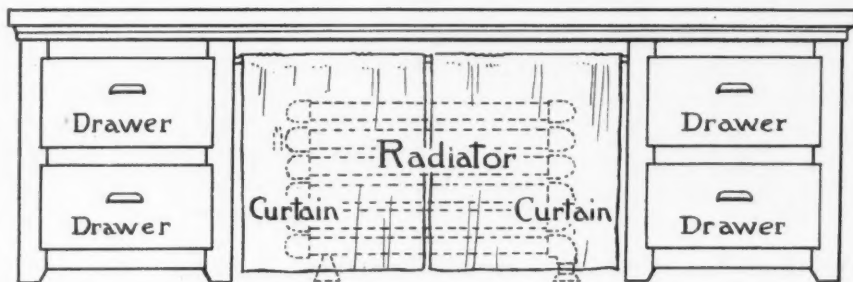


SECTION

Perspective, Section and Details of a Writing Desk That Carpenters Will Find Easy to Make and Sell.

SEAT and CABINETS to CONCEAL LOW RADIATOR

Seat



Cabinet, with Seat on Top, Designed to Conceal a Low Coil Radiator.

48 hours sandpaper lightly with No. 00 sandpaper or rub well with steel wool. Then give a coat of flat varnish.



How the Radiator May Be Concealed

By Charles Alma Byers

PERHAPS a home or apartment is equipped with old-style radiators, of the corrugated or coiled kind, that sit out from the wall and always seem in the way, as well as ugly, unsightly affairs. If so, the accompanying drawings will suggest ways in which they may be concealed from view.

If the radiator be of the high-standing type, it may be hidden in some such manner as shown in the second of these illustrations. This consists of a long counter-shelf arrangement, with a section of book-shelves beneath each end, while underneath the center, and above the enclosed radiator, is provided a couple of long shelves for sheet music or large books which must be laid flat-wise. A curtain-rod is extended between the book-shelves at the top of the radiator space, on which are hung two sections of curtain material that may be drawn to the sides when the heat is turned on. The inner sides of the radiator space may be lined with asbestos, if it is feared that the heat may damage the books, but this will rarely be found necessary.

The height of the long counter-shelf will depend largely upon the height of the radiator, and the depth of the shelves will naturally be governed to a certain degree by the distance the radiator stands away from the wall. To lessen the height the sheet-music space may be omitted entirely, or, if provided, it may be lessened or increased in height. In some instances, especially where the radiator is placed near a corner, it may also prove desirable to use only one section of book-shelves instead of the two here shown, in which case a vertical end board, securely braced, will be used to support the other end of the shelf-like top.

Book-shelves, of course, will be the more desirable for concealing the radiator located in the living room, but for the dining room a combination of sideboard

and cabinets of either shelves or drawers may be used instead, while for a bedroom the shelves, probably curtained like the radiator space, will be found most convenient for linen.

Concealing Low, Coil Radiators

The other illustration suggests a method for concealing the very low coiled radiator, frequently located beneath a window. In this case the concealing feature comprises a long, low seat, or bench, with cabinet of drawers at each end, while the radiator is, of course, hidden by the usual curtains. Here, again, the feature may be variously designed. For instance, only one of the cabinets may be provided if desired, and, instead of drawers, it may consist merely of a box with a hinged top. The seat may also be constructed with the end pieces extending perhaps a foot or so above the seat-shelf. Its design will naturally be more or less governed by the room in which it is to be used. Even it may be designed with book-shelves if preferred.

Either of these features is very easily constructed. The material will consist almost entirely of 1-inch or $\frac{7}{8}$ -inch boards, surfaced both sides. Moulding, however, may be used as a sort of finish beneath the extending edge of the top, and the ends of the shelves should rest on supporting cleats, as shown. The features, instead of being fastened to the wall, are the more desirable if movable, and they should be painted to match the remainder of the woodwork of the room.



The "Sugi" Finish for Woodwork

Suggestive of far away Japan—cherry blossoms and wistaria—the Sugi Finish possesses a peculiar charm. While it is true that this type of finish is seldom used for interior woodwork, yet it meets the demand for something different for the den, the smoking room, the grill room and the tea house.

It is also particularly adapted for small novelties, such as humidors, jewel cases, collar boxes and wooden articles of like nature made by the handy man of the home, or the ambitious and irrepressible boy. Such articles make excellent birthday or holiday gifts, and being made by the donor are doubly appreciated.

The name "Sugi" is derived from the Japanese Sugi or cedar tree, and no doubt is a development of the custom of the Japanese of making furniture and novelties from driftwood.

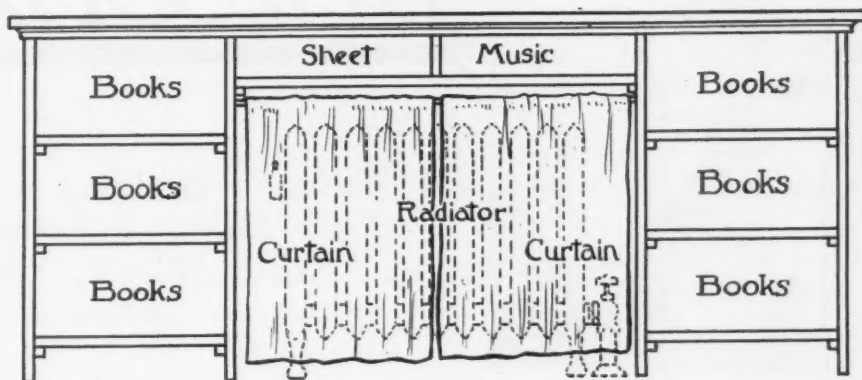
The modern Sugi finish, however, is more attractive than the Japanese driftwood, in that color has been added to the finish, enabling several attractive effects.

While this finish may be produced on several of the American woods, yet, of all these, cypress is by far the best medium. It seems to possess somewhat the same qualities as the Japanese driftwood.

In selecting the wood for the work in mind, one should be sure to secure cypress having an intricate grain—the more intricate the grain, the more attractive the final finish.

The first process is to char the wood uniformly, over the

BOOK^{and} MUSIC CASE to CONCEAL HIGH RADIATOR Shelf



Music Case and Book Case Combined, to Be Built Around Radiator. Curtains Conceal the Radiator.

entire surface, using a blow torch for the purpose. The wood should be charred thoroughly until the surface is almost black. When this has been done remove the charred wood, using a wire brush. On observation, it will be found that the sappy grain of the wood has been burned but little, while the soft parts have been burned deeply, giving the wood a very rough hill and valley appearance.

A coat of white paste wood-filler should then be applied with a stiff brush and allowed to stand for four or five minutes. The surplus filler should then be wiped off from the high spots or ridges, leaving the deeper indentations untouched. Let the work dry for forty-eight hours and complete the finish with two coats of wood lacquer.

If it is desired to produce a different color than that produced with the white filler, this may be done by tinting the filler to any desired shade by the use of color in oil.

The quaint, yet attractive effect produced is an agreeable surprise, as the intricate graining of the wood has been developed to the highest possible degree and is accentuated by the use of the colored filler in the deeply charred portions.



Profitable Winter Work

DURING the slack season or winter months $\frac{3}{4}$ -inch thickness oak flooring offers an excellent opportunity for carpenters and builders for laying in old homes where old pine floors are in use. Some canvassing is necessary to secure jobs, but when the work is started the entire neighborhood soon hears about it. A few floors laid in any neighborhood will bring about an abundant supply of jobs. Three-eighths-inch oak flooring can be laid in a room without disturbing any of the woodwork except the quarter round at the baseboard, and one room at a time can be laid and completely finished without disturbing the occupants to any great degree. Carpenters taking up this class of work should have complete information in regard to the different kinds of faces of oak flooring, as well as the proper methods of laying the floor, prices from the retail lumber dealer for the stock, nails, etc. A good reputation for first-class work is soon paraded and results is increased business. There has been many a carpenter during the last few years who has taken up this line of work as a sideline, and who has developed into a specialist of laying oak floors in new homes, as well as remodeling and improving old homes by use of oak flooring.

The manufacturers of oak flooring have books and folders imparting full information on how to lay oak floors, as well as the filling and finishing in varnish or wax. These books or folders are generally distributed by the manufacturers to all the retail lumber dealers, and they, in turn, generally carry a supply for the free use of any one who desires them.



Fred Beard says:

"Selling a Building Contract Is No Different Than Selling a Furnace--It Can't Be Done in a Minute, You've Got to Keep After a Prospect"

SAM WILLIAMS was so occupied with his thoughts as he sat in the public square in his home city, that he did not see Ed. Maple until his friend stopped squarely in front of him. It was October, and the walks of the park were covered with dead leaves, which the frost had transformed from their natural green to golden shades, and which covered the cement paths like so many pieces of bright-hued mosaic.

"What's the matter, Sam? Is your conscience bothering you, or are you just trying to figure out how to spend the money you have made building homes for people this summer?" inquired Ed.

"The former I have not, having lost it many years

ago; the latter I have, but not in any such large amount as to be burdensome. No, what I was thinking about is this: The time of the year has come when we building contractors seem to think we ought to lay down our tools, house our equipment, and, like the bear, or groundhog, go to sleep and slumber until spring. I like to sleep, and a little too much is just about right, as David Harum said about turkey. But when you're asleep you don't add much to your bank account. I was considering the possibility of making money, and keeping busy this winter."

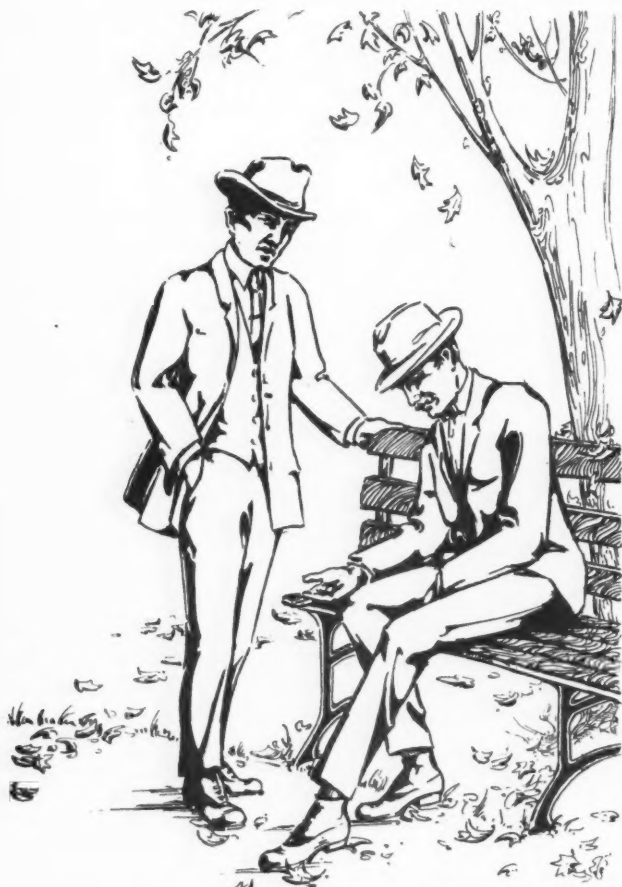
"It is easy to do the latter, providing you have that great human trait of minding other people's business; but making money is another thing again. What, might I ask, are you considering doing to keep making money this winter?"

"Your question is the very one that I was on my way over to Fred Beard's store to ask Fred," replied Sam. "Fred is a gold mine of ideas. All he needs, when his self-starter doesn't work, is one turnover of that high-powered engine he has right under his hair, separated from it only by a protecting covering of bone, commonly called the skull. Fred always has an idea, and you know as well as I do that nine times out of ten his ideas are good ones."

Fred Beard Gets the Problem

"Fred," said Ed. Maple, as the two men entered the hardware store, "in my companion here, you see a pilgrim come to the shrine for inspiration and solace. Sam has a weighty question that is resting heavily on his mind. Not satisfied with all the money he has made this summer, he wants to know how he can keep right on making it this winter. And knowing from experience that ideas are as numerous in your mind, as dollars in John D. Rockefeller's banks, he has come to ask you: 'How can I keep busy, and make some money this winter?'"

"Thanks, Ed., thanks. You delight me with your flattery. And, if as you say, ideas with me were as numerous as the dollars located where you indicate, I certainly would be a brilliant man. But, on the other hand, if it were as difficult to separate me from my ideas, as it is commonly reported to be to get at those



"What's the Matter, Sam?" Asked Ed. Williams, as He Confronted the Building Contractor in the Park.

dollars, I am afraid Sam, here, he would have made his pilgrimage in vain. However, be that as it may, suffice it to say that I am ever ready to be of service to my friends. What, Sam, did you figure on doing?"

"We contractors heretofore have been content to sit down in the winter and just wait for spring to come, and with spring the opening of the building season. Now what I want to do is to work this winter, and what I want to work at is getting contracts, so that when the weather breaks I will be ready to go ahead with building. You know, Fred, and you know it too, Ed., that we waste a couple of months almost every season, first in getting contracts, and, second, in getting plans and materials before we are able to actually begin to build. That's the problem: How can I keep busy this winter getting ready for next spring? The way I will make money by keeping busy this winter is by doing a great deal more business next season than I would if I retired to my hole."

Follow the Lead of Successful Men—Advertise

"Whenever I run up against a problem in my business, I usually am able to solve it by considering what the great big successful men and concerns do to accomplish the result I seek," explained Fred, as a preface to what his two friends could see was to be a rather lengthy talk on business methods. "And," he continued, "I then steer my course according to their charts."

"Did either of you men ever hear of what is called 'cumulative advertising'?"

"Don't even know what the word 'cumulative' means," replied Sam.

"No more do I," echoed Ed. "I've read about

'general publicity' and 'direct advertising,' but this 'cumulative' thing is a new one on me."

"Well, both of you fellows have knocked some pretty well-nailed lumber apart. The first blow apparently had no effect on it. The second had little more, but by continuing to pound, all at once the nails seem to loose their hold and a few more taps accomplishes the result. That describes cumulative advertising. The first attack on a likely prospect for a building apparently has no effect; neither does the second. But, if you keep on hammering away at him, all at once he becomes interested, and you can develop that interest into a contract."

"Thousands of concerns do that very thing by mail. They send a circular—no results. They send another one—no results. But they keep on, and after awhile you begin to take an interest, and a great many times—not always, bear in mind—that interest results in your buying. At least, when you do want to buy, you know right where you can get that certain article."

Selling Building Contracts Is Like Selling Anything Else

"Selling building contracts is not different from selling a furnace, for instance. I find someone who is heating his house with a stove. I know that a furnace would make his home more comfortable, would save him work. I talk furnace to this prospect. At first he doesn't buy. But I keep right on, and in many instances I make a sale. That sale is the result of cumulative advertising, not necessarily by talk, but by using letters and printed matter."

"That is a tip for you, Sam. Do some cumulative advertising this winter. Pick out the people who live

(Continued to page 114)



"Did Either of You Two Men Ever Hear of What Is Called 'Cumulative' Advertising?" Inquired Fred Beard.

Blue Prints of a Nine-Room Stucco House

THE FOUR-PAGE SUPPLEMENT THAT FOLLOWS GIVES PLANS FOR AN EXCEPTIONALLY ATTRACTIVE AND CONVENIENT RESIDENCE

THE blue print supplement this month gives the plans for an exceptionally good residence. It is a stucco home of attractive exterior appearance and convenient interior arrangement—one that will have a strong appeal for many of the prospective home builders, who want an up-to-date house for a good-sized family.

The exterior view of this home, shown at the bottom of this page, gives a fine idea of what an attractive home can be built by following the blue-printed plans. The broad porch, with the covered drive beside it, the stuccoed walls and roof lines and the placing of the windows all combine to make this a home that will cause observers to take a second look. Inside, this house is arranged to accommodate a good-sized family, and permit the work to be done with the least amount of effort—a feature that will appeal to the women members of the family.

Sheet No. 1 of the blue print supplement shows the first floor plan of the house; sheet No. 2 the second floor plan; sheet No. 3 the basement plan, and sheet No. 4 the front elevation, a wall section, and cornice detail.

Dimensions Are Only 32 by 40 Feet

The dimensions of the house are only 32 by 40 feet, but every foot has been utilized to the utmost. The house contains nine rooms, four on the first floor and five on the second, counting the large sleeping porch.

Entrance to the house is thru a good-sized hall at the left end of the porch. Out of this hall opens an open stairway, leading to a common landing with stairs out of the kitchen. The living room is 21 feet, 9 inches, by 16 feet, 3 inches, and has a large fire-place set into the end wall. The living room is connected with the dining room by double accordion doors.

The dining room is 20 feet, 6 inches, by 13 feet, 6 inches, and has an attractive bay. To one side is the kitchen, also of good size with a pantry adjoining. Back of the dining room are a breakfast nook, just off the kitchen, a lavatory and wardrobe, and next is a den, equipped with a space saving bed, adding to the sleeping accommodations of the house.

On the second floor are four bedrooms, bath room, and sleeping porch, which also is equipped with a space-saving bed, making it available for a living porch in the daytime and a sleeping porch at night.



PERSPECTIVE OF AN EXTRAORDINARY NINE-ROOM STUCCO HOUSE. This design is only 32 by 40 feet in dimensions, but it is a fine type of stucco house. It contains nine rooms, all well arranged. It has exterior beauty, and altogether is the type of home that many builders want.

COMPLETE BLUE PRINTED PLANS OF THIS FINE RESIDENCE ARE CONTAINED IN THE FOUR-PAGE BLUE PRINT SUPPLEMENT THAT FOLLOWS.

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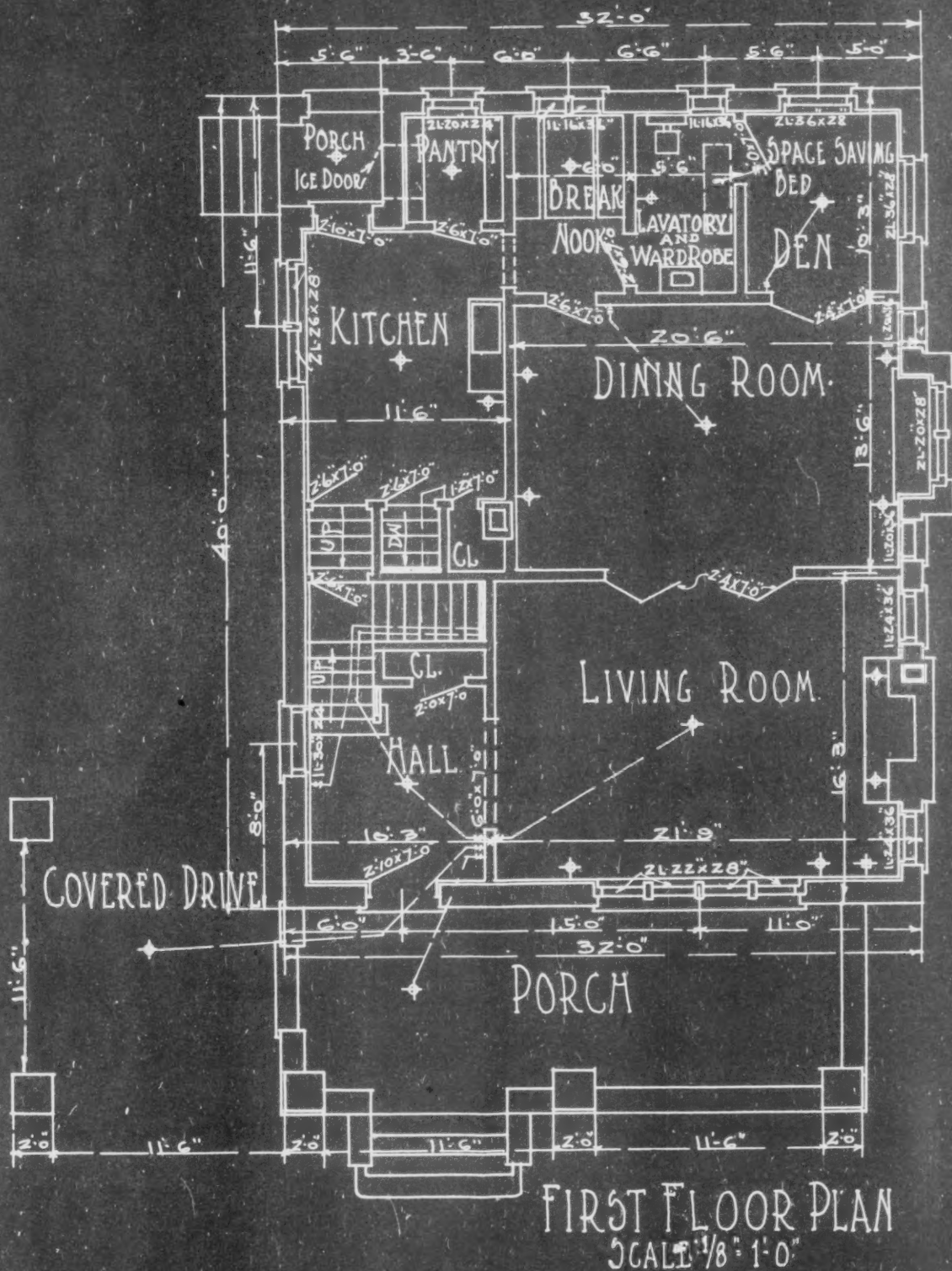
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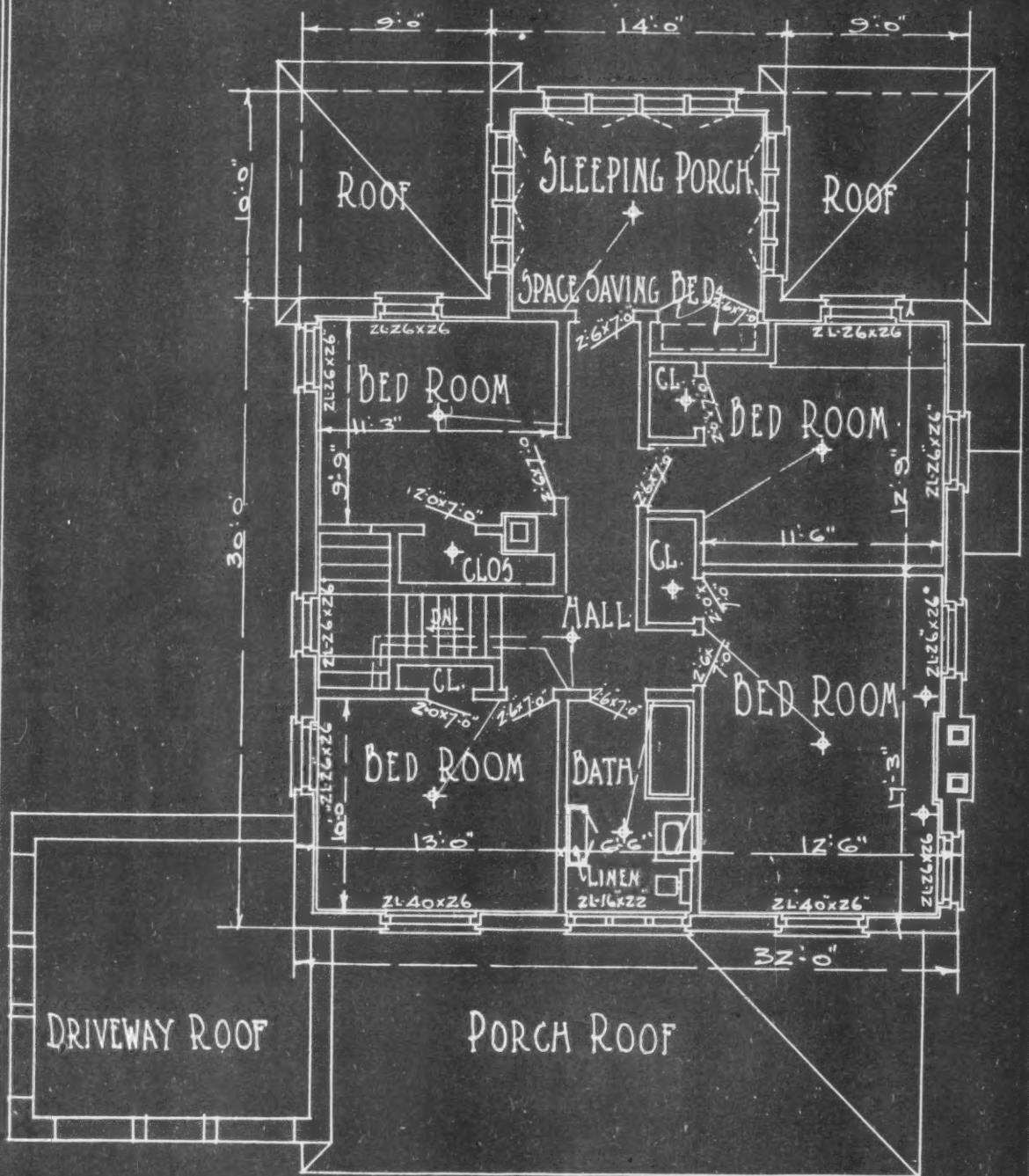
AMERICAN BUILDER BUILDING PLANS



9 ROOM RESIDENCE

SHEET N^o 1

AMERICAN BUILDER BUILDING PLANS

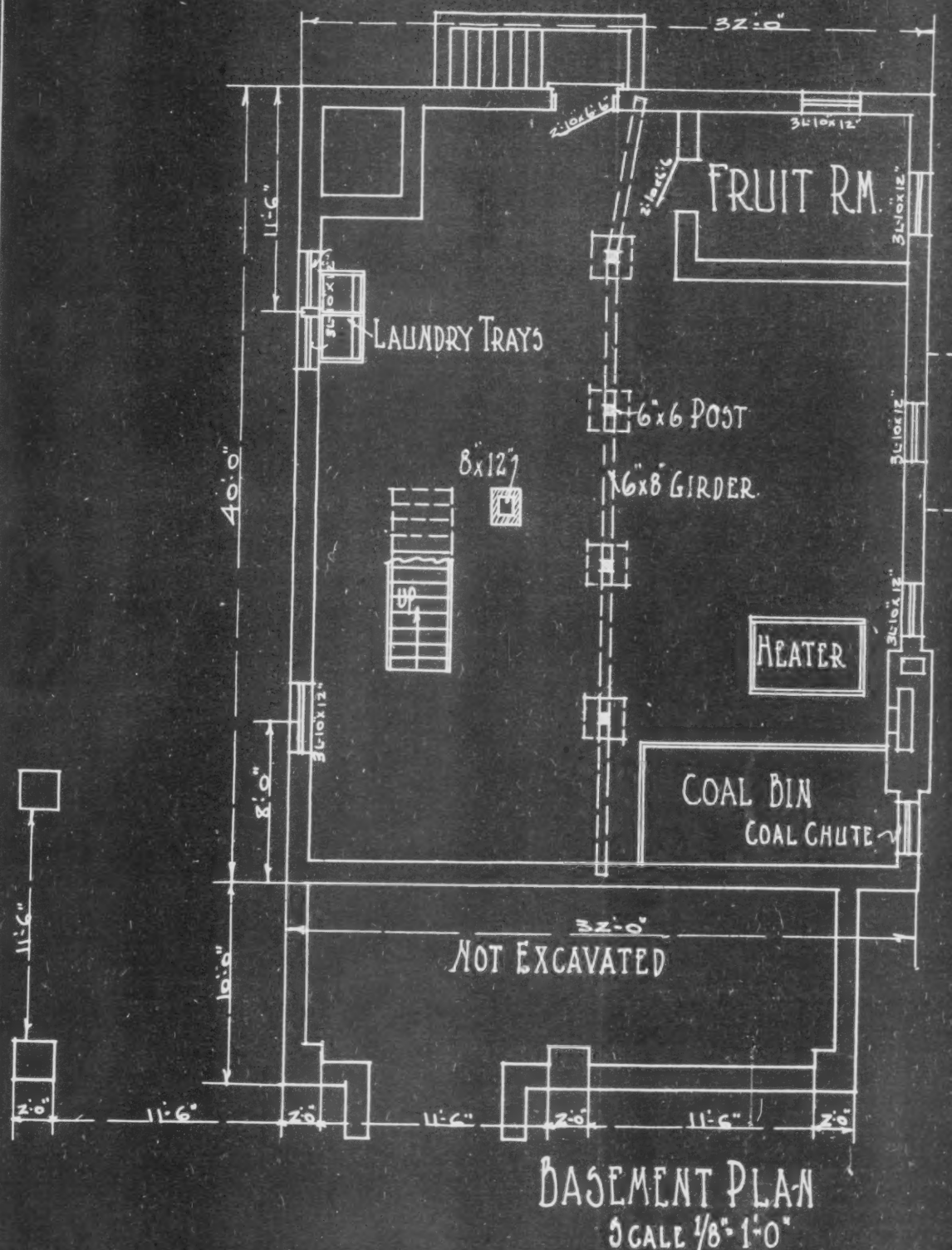


SECOND FLOOR PLAN
SCALE 1/8"=1'-0"

9 ROOM RESIDENCE

SHEET N° 2

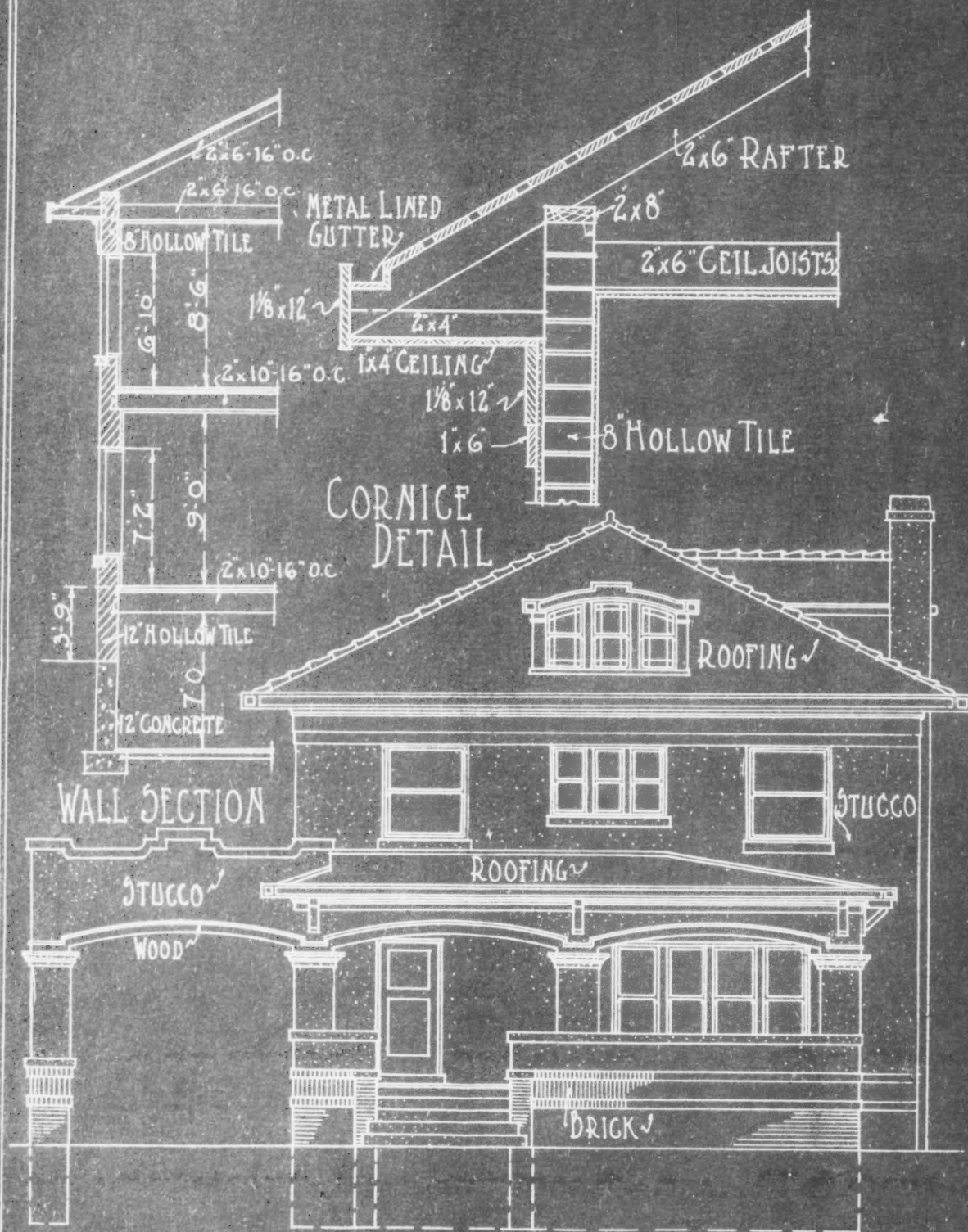
AMERICAN-BUILDER BUILDING PLANS



9 ROOM RESIDENCE

SHEET N^o 3

AMERICAN BUILDER BUILDING PLANS



FRONT ELEVATION
SCALE 1/8"=1'-0"

9 ROOM RESIDENCE

SHEET N° 4

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Design for a Good Sized Horse Barn

THIS MODERN STRUCTURE ALSO IS EQUALLY GOOD AS A DAIRY BARN.

NOTWITHSTANDING the popularity of the tractor and automobile, there are many farmers who retain their love for horses and find that breeding and raising them for sale is just as profitable as before the advent of the power-driven machines. For farmers and horse breeders, there is a design for a barn that will provide the horse a comfortable and healthful place to live in.

With its gambrel roof and vertical battened siding, this barn is attractive from the exterior. The layout of the interior has been devised so that the work of caring for the horses can be done easily, and the animals themselves will be well protected from the weather, and at the same time have fresh air and the other things necessary to keep them healthy and capable of doing their best work.

The barn is of frame construction, 40 by 72 feet. In it are 18 single stalls, two double stalls and two box stalls, besides feed room and a harness room. The stalls are placed so that the horses face an alley, so that they may be fed without unnecessary labor. At either side of the building is a litter alley. Hay racks and oat or corn boxes are at each stall head.

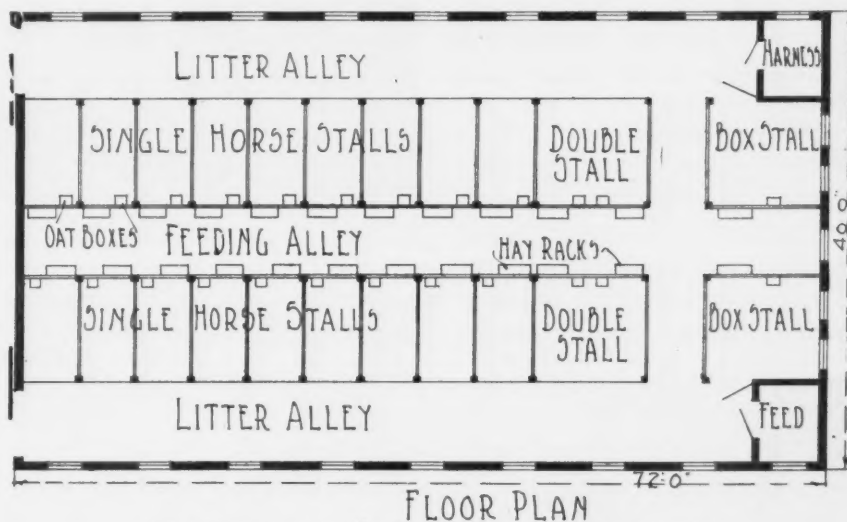
Nine windows permit the entrance of air and sunlight on the litter alleys. Sunlight helps to keep the barn sanitary, as it kills germs.

The size of the barn permits a large hay mow, where is stored the winter's supply of roughage.

While the stalls here are designated for horses, this design is equally good for a dairy barn. The arrangement of the feed and litter alleys, the stalls and the storage room is almost exactly like that for modern dairy barns. There are stalls enough to accommodate twenty-two horses, or a like number of cows, together with a stallion or a bull.

This is the sort of a barn that now is being erected on a majority of farms. It is well-constructed, is weather tight, is provided with a good system of ventilation, and is so arranged that the work of caring for either horses or cows can be accomplished with a minimum of effort. ✱

WHETHER or not the cost of a thing is high is a matter of viewpoint. It was not so long ago that \$5,000 was a pretty fair price for a home. Now the mark is \$10,000, and there are no kicks.



Floor Plan of Horse Barn to Accommodate 24 Animals.



Perspective of a Good-Sized Horse Barn, 40 by 72 Feet. It Will Accommodate 24 Horses, and Has Plenty of Room for the Hay Required to Feed Them.

The Advantages of Tiled Bathrooms

By Milton W. Consolvo

THE tiled bathroom stands today as the symbol of all the rich variety of conveniences and luxurious necessities which Americans have come to expect in their homes. It has entered into the code of modern home building as an essential to comfort and convenience. Thus a home, whether it costs five or fifty thousand dollars, is incomplete and lacks the qualifying feature if the bathroom is not tiled. People have learned to appreciate and value tiling as the ideal, the superlative in bathroom finish, and have found that by no other means can this high standard of cleanliness, of service and of satisfaction even be approached. Tiling provides a degree of permanency, healthfulness and charm by virtue of its structural and decorative fitness, and by its sanitary qualities, that is obtainable in few other ways.

Tiling of the bathroom assures the maximum of cleanliness, durability and attractiveness and combines with it a minimum of routine labor in cleaning and freedom from

up-keep expense. There is no maintenance expenditure of any kind if the bathroom is built similar to the ones in the accompanying photographs.

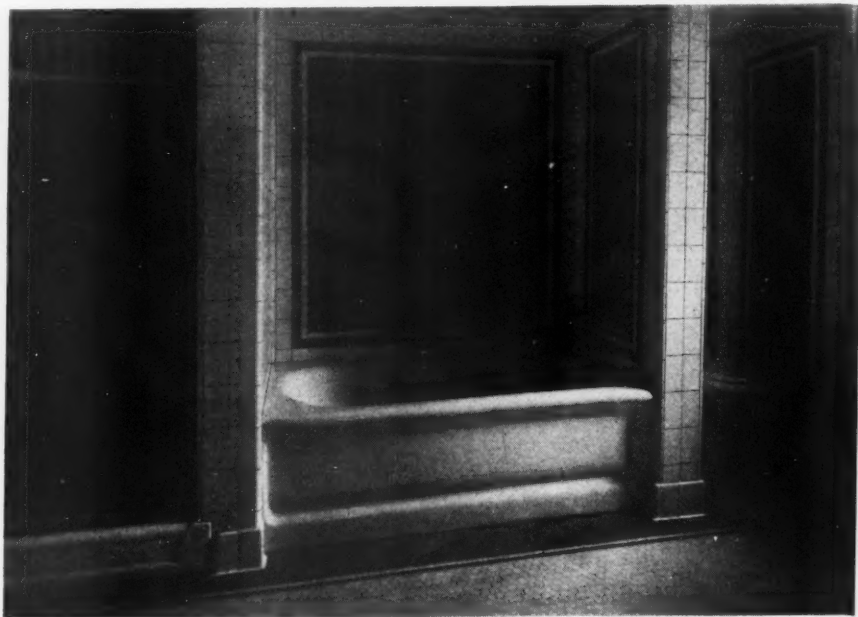


Photo 2. Good Arrangement of Fixtures and Tiled Partitions in the Bathroom.



Photo 1. Corner of a Bathroom with Tiled Floors and Walls, and Modern Plumbing Fixtures.

There is no need of the bathroom being the unimportant feature in home building, a tiled bathroom with well-arranged plumbing fixtures is the making of any modern building, it is used more by the occupants than any other room in the entire house, there is no limit to the many ways of arranging the fixtures, of the many pleasant sizes, beautiful glazes and dainty colors in which tiles may be used, making, therefore, one bathroom different from any other.

In photograph No. 1 is shown the corner of a bathroom that is tiled thruout. There is no wood or plaster in this room. It is of the more usual color, being all white, the walls and ceiling are $4\frac{1}{4}$ in. square with 1 by 6 in. sanitary cove at floor and ceiling angles. The floor is of 1 in. hexagons; the window stool is of white marble. A room finished in this manner is everlasting, and there will be no painter or paperhanger presenting his bills for work done here.

Photograph No. 2 shows a very satisfactory arrangement of the fixtures with tile partitions. There is no wood in this room, the door to the shower is of plate glass set in a nickel on brass frame, leaving nothing to rot or rust. It can readily be seen what an improvement this is over the plaster marked to imitate tile, which is always cracking and scaling. The first cost of a room such as this may be higher, the ultimate cost is always lower.

In photograph No. 3 an alcove off the bathroom is shown in which are shower, wardrobes and linen closets. The tile wall shown is 6 in. in height. In less

expensive houses the walls may be tiled as low as 4 inches, this proving satisfactory also as water seldom gets above this height.

The room in No. 4 is a smaller room such as are often used in bungalow and cottages, showing that a small room can be made as convenient and attractive as large ones.

A tile bathroom is always in good taste, not only with respect to time, but also with regard to architectural design. Tiles are appropriate for all periods as well as all modern decorative styles and treatments.



Overcoating a House Saves Coal

"In these days when every one is looking for means of fighting old man H. C. L., anything which will help to reduce the size of household expenses is of tremendous importance," says a statement issued by the Associated Metal Lath Manufacturers.



Photo 4. Small Bathroom, for Bungalows and the Smaller Houses, with Tile Floors and the Walls Tiled Part Way Up.

"Metal lath manufacturers have claimed that the use of stucco and metal lath for overcoating old frame houses would very materially reduce the amount of coal required to heat the house during the severe winter months.

"Tests have been recently conducted at the Armour Institute, Chicago, Ill., by the Associated Metal Lath Manufacturers which prove conclusively that overcoating is an added heat insulation to frame structures.

"These tests show that the thermal conductivity of the ordinary frame wall is reduced 15.7 per cent when overcoated with portland cement, stucco and metal lath. This means that this construction is an added insulation so that 15.7 per cent less heat passes out of the building thru the walls. Considering that the windows occupy 15 per cent of the total wall space, the net saving in coal bill for the owner of a frame house which has been overcoated is 13.3 per cent.

"At the present price of coal it is cheaper to overcoat a house than to leave it with an exterior surface thru which more than 15 per cent of the heat is lost and which must be frequently painted in order to keep it attractive and in good repair.

"Overcoating not only insures a saving in fuel and the cost of upkeep of the building, but an old house can by this method be easily modernized and very materially increased in sales value."



Photo 5. Bath Room Alcove with Tiled Walls and Shower Bath.

STRUCTURAL TILE WORK

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Stores, Garages, etc.



Conducted by
H. S. BRIGHTLY,
Hollow Building Tile Con-
struction Engineer

If you will send us a plan or sketch of the building you are thinking of erecting, Mr. Brightly will tell you about the sizes, shapes and quantities of hollow building tile that will best serve your requirements.—EDITOR.

Hollow Building Tile Construction

DETERMINING THE STORY HEIGHTS THAT WILL WORK OUT EVENLY WITH THE TILE COURSES FOR THE VARIOUS SHAPES OF HOLLOW TILE

By H. S. Brightly

CONTINUING last month's article, the question of proper size for openings in hollow tile walls must be considered. This involves determining the size of both frames and sash or doors that should be used, preferably by adopting standard sash and door sizes, to fit a size of rough opening that will suit the requirement of the particular instance and at the same time work out properly with the hollow tile units that are to be used.

Before taking up this question it will be at least proper, if not necessary, to consider the question of story heights and the article this month will, therefore, be devoted to that subject with particular reference to residence buildings.

The size of hollow tile unit that is to be used and consequent height of course that the tile and mortar joint will lay up in the wall should first be settled.

Size of the Bed Joints

For the usual 8 by 5 by 12-inch building tile and other tile units that are laid on the side, it is customary to allow a half-inch for the horizontal or bed joints and from a quarter to a half-inch for the vertical or end joints. Some architects endeavor to work to a narrower bed joint and only allow three-eighths inch. This is too small an allowance both on account of the size of the units and the inherent irregularities in this or any rough structural product, regardless of how carefully it may be manufactured. A full half-

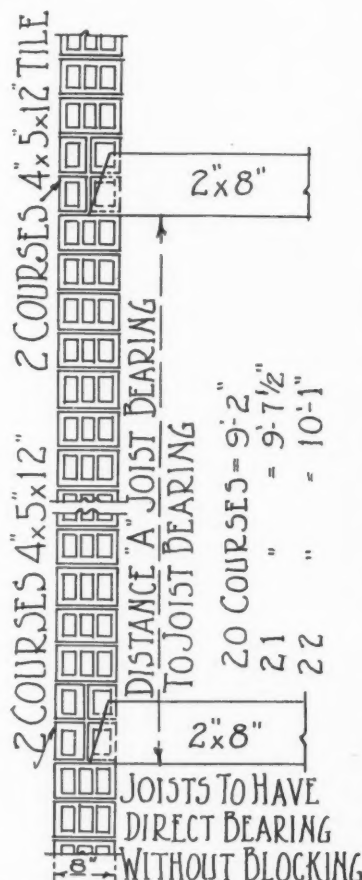


Fig. 1. Vertical Section of Wall of 8 by 5 by 12-inch Load Bearing Tile Laid on the Side.

inch is the least that should be allowed and frequently it may be found better practice to allow five-eighths inch.

Assume the course to equal five and five-tenths inches, also that 2 by 8-inch joist with double floors are to be used, and as joist are seldom spaced close enough to permit the direct application of lath to underside of same particularly when double floors are used, it is customary to cross fur the ceiling with 1 by 2-inch strips either 2 or 16 inches c-c, which with the lath plastering calls for an allowance of 2 inches for ceiling thickness, thus adding

approximately 11 to 12 inches for floor thickness to any given story height and to figure the number of courses required, proceed as follows:

The 8-foot ceiling takes 9 feet or 108 inches which divided by 5.5 inches gives $19\frac{1}{2}$ courses. It is naturally advisable to have the distance from under side of joist to underside of joist or rafter above, work out evenly with the courses so that the joist may have bearing on the tile without blocking up, also to facilitate the placing of door and window openings.

Therefore the story height or distance "joist bearing" to "joist bearing" (see Figs. 1 and 2) should be taken as some multiple of the height of course, in this instance either 19 or 20 courses and as 8 feet gives a rather low story, we shall assume 20 courses at 5.5 inches or 110 inches less thickness of floor, 12 inches, equals about 8 feet 2 inches, as the clear height between plastered ceiling and finished floor. If 10-inch joist were used it would be 8 feet.

Fig. 3 shows in detail how the thickness of floor construction is figured.

Where an 8-foot 6-inch ceiling height is desired, figuring 21 courses on the same basis, gives a clear height of 8 feet $7\frac{1}{2}$ inches with 8-inch joist or 8 feet $5\frac{1}{2}$ inches with 10-inch joists. Where a 9-foot ceiling is desired 22 courses would similarly give 9 feet 1 inch with 8-inch joist or 8 feet 11 inches with 10-inch joist.

If only a single floor were to be laid it would add about 1 inch to all of these figures for clear height. If both cross furring and under floor were omitted it would not affect the number of courses that are figured, as somewhat less than 2 inches would be added to the clear height and the relationship of sill to floor and window head to ceiling altered by not over an inch.

Tile that are made to be laid with the cells horizontal usually are made in units either 5 or 8 inches in height. For 8-foot ceiling with 8-inch high units, divide 108 inches by 8.5 inches, equals 12.7 courses. Take 13 courses at 8.5 inches or 110.5 less 12 inches, equals about 8 feet 2.5 inches clear height between plastered ceiling and finished floor for 8-inch joist

and 2 inches less with 10-inch joist. With the 8-inch high unit an 8-foot 6-inch ceiling could not be obtained without resorting to blocking up and the next step would be 14 courses, giving 8 feet 11 inches clear height with 8-inch joist and so on up.

To determine the most practical story heights for any other size unit that is laid on the side proceed in the same manner.

Standard Forms of Load Bearing Tile

Considering next the standard forms of load bearing tile that are made to be set with the cells vertical in the wall and which for any thickness of wall have a 12 by 12-inch face for 12-inch courses. It is quite customary to make the usual one-half inch allowance for the horizontal bed joints with these units, but this is hardly sufficient in ordinary work and five-eighths inch is a more safe average. This gives some leeway in the leveling up of courses where there is some little variation in the size of finished product.

With this form of tile it is best to cap off the wall at each story level with a course of tile slabs both to give a proper bearing for the joist and for the tile forming the joist course in wall and to close up the cells and cut off the circulation of air within the cells at each story level. For the tile slab course a full one and a half inch should be allowed (see Fig. 2).

Starting with the 8-foot ceiling, add the floor and ceiling thickness same as for the other forms of construction already referred to, which gives 108 inches divided by 12.6 inches, or about 8.6 courses.

This height of ceiling, therefore, calls for eight full courses and one half-height course, for which latter course the tile are ordered in half lengths, generally referred to as "half cuts" or "half-cut tile."

This would be figured as follows: Eight times

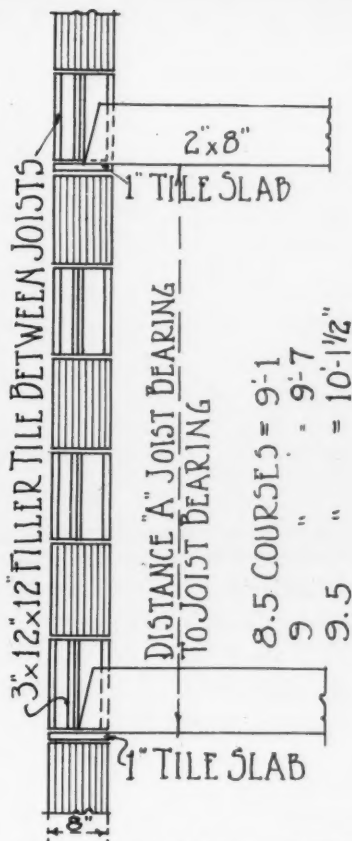


Fig. 2. Vertical Section of Wall of 8 by 12 by 12-Inch Load Bearing Tile Set on End.

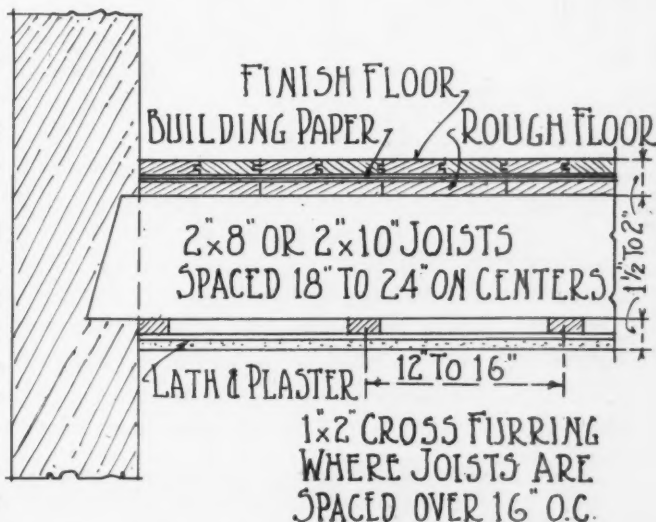


Fig. 3. Total Depth of Floor Construction Taken as 10 Inches Where 2 by 6-Inch Joists Are Used; as 12 Inches Where 2 by 8-Inch Joists Are Used, and as 14 Inches Where 2 by 10-Inch Joists Are Used. Actually the Thickness Will Often Average About 1 Inch Less Than These Figures, Which Will Allow for the Leveling Up of Any Irregular Joist, or the Cross Stripping of Underfloor, so That the Finished Floor May Run in the Same Direction as the Underfloor.

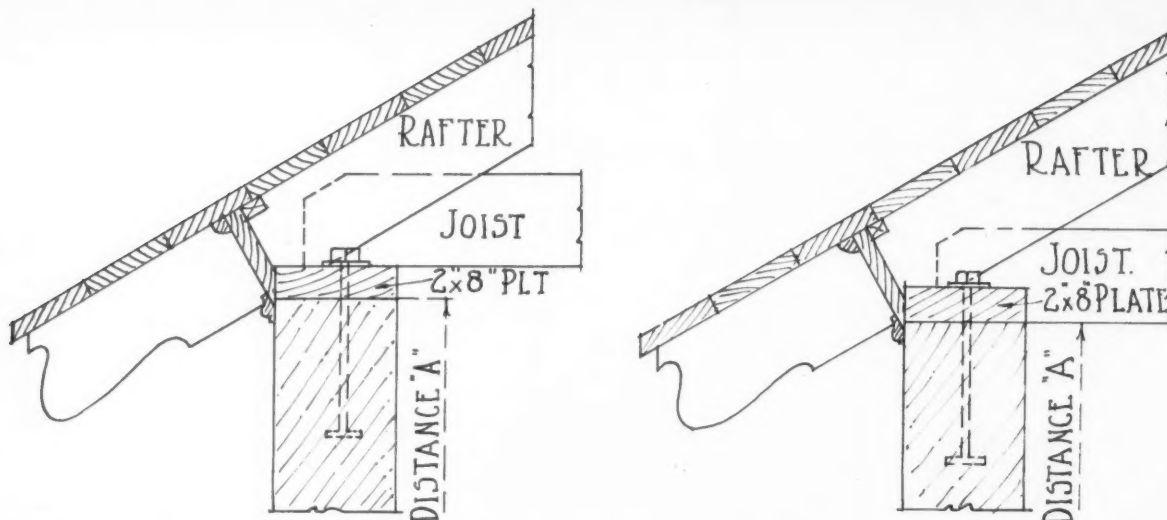


Fig. 4. Joist Bearing in Upper Story Raised 2 Inches Over Distance "A" by Roof Plate. Except Where It Is Cut Out to Fit Over Plate, as Shown in Alternate Drawing.

12.6 inches, plus 6.6 inches, plus 1.6 inch for slab course, or 109 inches less 12 inches equals 8 feet 1 inch for clear heights of ceiling with 8-inch joist and 7 feet 11 inches with 10-inch joist.

Nine Courses Generally Used

Generally nine full courses would be used, adding 6 inches to these figures and giving a clear height averaging around 8 feet 6 inches, which is a very satisfactory ceiling height for the average small or moderate sized residence. Any desired height above this in approximately $6\frac{1}{4}$ -inch steps can be obtained by using a course of half length tile in the intermediate steps.

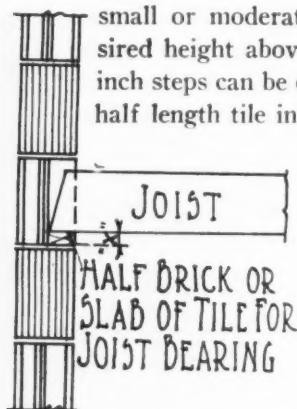


Fig. 5. Joist Bearing on Wall of 8 by 12 by 12-Inch Hollow Tile. Dimension "X" is the Difference in Relation of Joist Bearing, and the Tile Course That Is Occasioned by the Thickness of the Bearing Slab, or Blocking Up of Joist.

Where the roof overhangs the wall or where the wall is finished by a cornice at the ceiling line of upper story, the foregoing applies particularly to the first story in a two-story building, or to all lower stories in buildings of greater heights, is for a given number of courses per story the clear height of the upper story will be 2 inches greater on account of the

2-inch plank roof plate that is bolted on top of wall to receive the roof framing and on which the ceiling joist or rafter would rest, unless the joist or rafters are notched out over the plate as shown by Fig. 4.

In the typical residence buildings it is customary to make the clear height of second story somewhat less than the first.

Therefore, where 21 courses of 8 by 5 by 12-inch building tile were used in the lower story it would be good practice to use 20 courses in the second story, which gives only $3\frac{1}{2}$ inches less clear height in the upper floor after the 2-inch thickness of roof plate is allowed for.

Similarly with the standard end construction tile (12 by 12-inch face) where nine courses are used in lower story eight and a half courses could be used in the upper story, giving about $4\frac{1}{2}$ inches less clear height in upper floor.

Where it is desired to have the upper story exactly the same as the one below, the same number of courses should be used and the ceiling joist notched out on the roof plate as already referred to (see Fig. 4).

Should the slab courses at story levels not be used with the 12 by 12-inch face vertical cell tile, the method of figuring story heights is the same, except that allowance for slab course is omitted in figuring height of the tile and joints and the clear height for a given number of courses would, therefore, be about 1.5 inches less than the figures already given. In such cases, however, the joist should be given a full bearing by resting on a half brick or piece of tile as shown by Fig. 5. This raises the floor level one or two inches in relation to the tile courses and allowance for this difference should also be made when clear story heights are figured.

For Foundations

When hollow building tile is used for foundation or basement walls the number of courses required is figured in a similar manner, except the height added for thickness of the floor construction will usually be 4 inches instead of 12 inches. Thus if a 7-foot 6-inch basement were required and either an 8-inch wall of 8 by 5 by 12-inch tile or a 12-inch wall of 8 by 5 by 12-inch and 4 by 5 by 12-inch were to be used, take

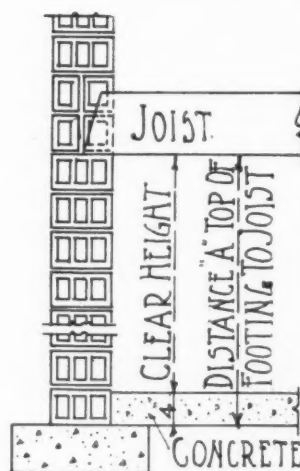


Fig. 6. Showing Method of Figuring Story Height for Cellar, or Basement Story

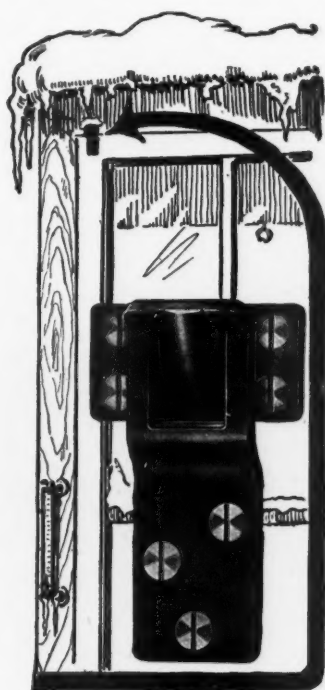
(Continued to Page 114)

"When you've done a good piece of work insure it and your reputation. Don't buy cheap hardware or it won't be long before your customer will be blaming you for a poor job,"

says



YOUR CUSTOMERS will get full efficiency from your storm sashes if you equip them with hardware on which the sashes can be hung easily and closed up snugly—as when you use Stanley Storm Sash Hardware.



Hanger No. 1715

The angle on the hook and eye of Stanley Hanger No. 1715 guides the eye up and over the hook so that your customer can hang the sashes quickly from inside his house. In the summer full length screens can be fitted on the same hooks you used for the storm sash.

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Most of your customers know about Stanley Storm Sash Hardware thru our advertisements in the farm papers and general magazines. Your builders' hardware dealer carries a complete stock.

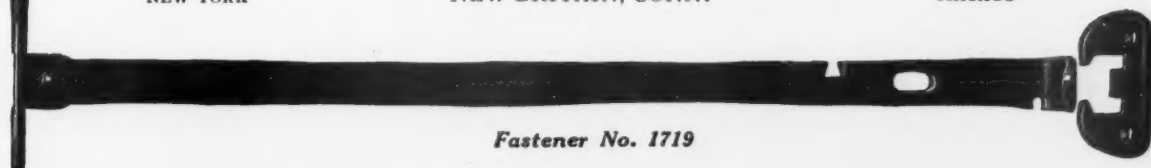
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NEW YORK

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Fastener No. 1719

Design for a Small Hog House

SMALL STRUCTURES PREFERRED BY MANY FARMERS.

IT is just as essential that the owner of one or two hogs have a comfortable and healthful house for them as it is for the hog raiser who has a hundred animals, because success is more certain when the animals have sanitary places in which to live.

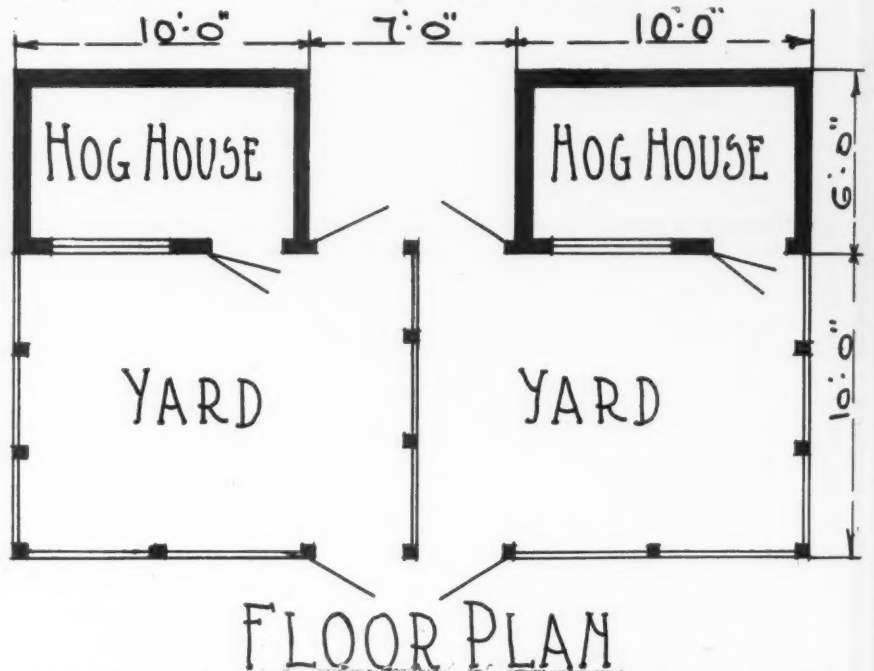
Here is a design for a small hog house, 10 by 6 feet, that will keep several animals in a healthy condition. It is a well-constructed frame building, equipped with a broad window to permit plenty of sunshine in the colder weather, and with Dutch doors, which allow good ventilation in the summer.

The floor plan and layout of the hog house and adjoining yard show how well adapted this design is for a home for a sow and her litter of pigs. The yard, 10 feet square, gives the mother and the little ones a chance for exercise in good weather and provides them with shelter when the weather is stormy or cold.

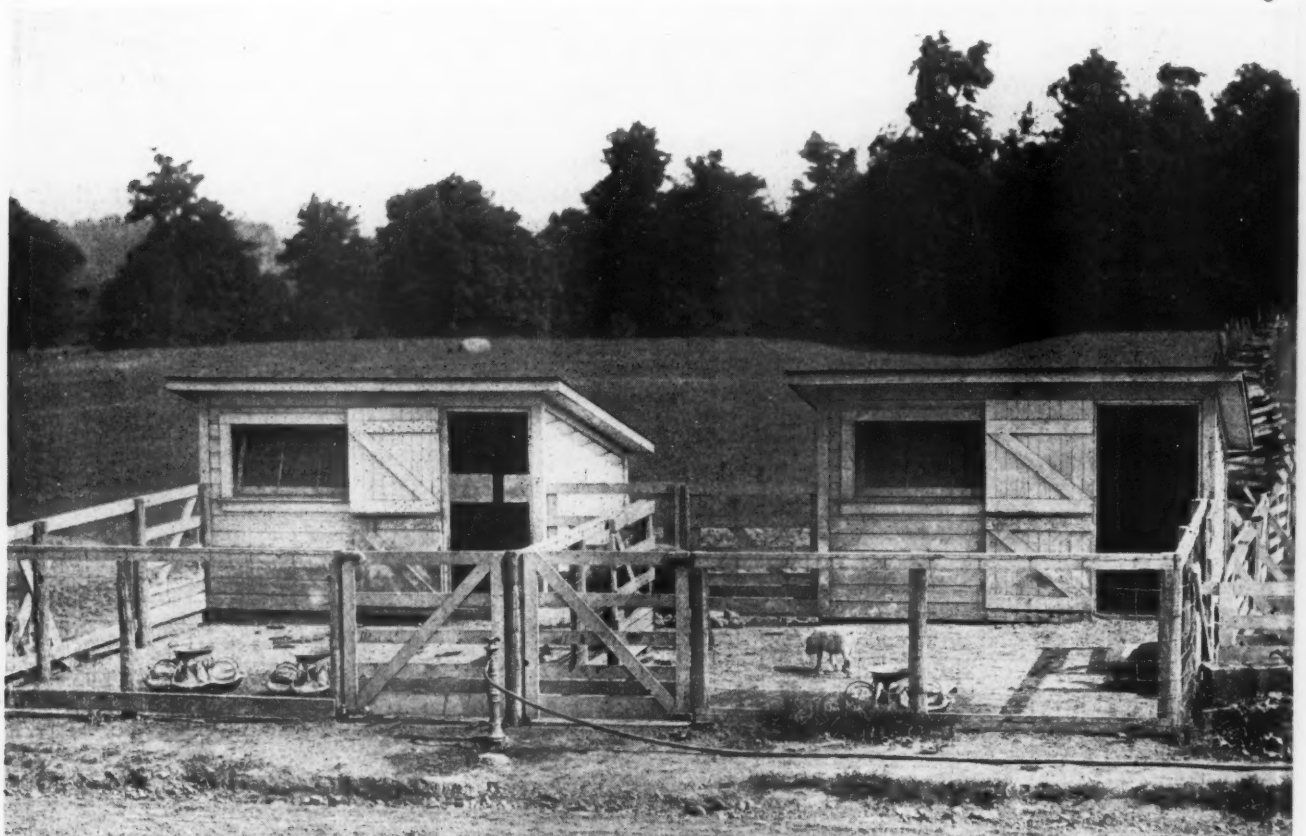
Many hog raisers prefer individual houses, or houses that will accommodate four or five animals. There is less danger of disease

spreading thru the whole herd when they are housed separately, and by small buildings are more quickly warmed in the winter by the heat from the bodies of the hogs.

Contractors who specialize, or have calls for farm buildings, will find houses such as these suited to the needs of many of their farmer clients.



Floor Plans and Layout of Houses and Yards of Small Hog Houses, 6 by 10 Feet.



Small Hog Houses Are Preferred by Many Farmers. These Are 6 by 10 Feet, of Frame Construction, and Provide Warm, Comfortable Homes for the Animals.



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Estimating Practical rules. Problems worked out from the plans. Brickwork and carpentry. Excavations. Labor and material for footings in brick, concrete and rubble stone. Methods of practical builders. Reinforced concrete—full plans and specifications for re-inforced concrete buildings. Estimates of labor and material required. Labor and material for brick work; figuring common and pressed brick walls of different thicknesses, etc. Chimneys, fire places and cisterns. Fire proofing, tile, tile flooring, arches, partitions, furring, terra cotta, etc. Lumber and timber; figuring board feet. Estimating posts, girders, sills,

joints, studs, bridging, rafters, etc. Estimating all kinds of roofs, floors, siding, cornices, etc. Labor for rough and finished carpentry.

Estimating mill work. Labor and material for window and door frames, sash, blinds, base board, wainscoting and all kinds of closets, cupboards, etc. Lathing, plastering, sheet metal work, exterior and interior marble jointing and decorating; glazing, plumbing, heating, wiring, etc.

Construction Brickwork: Footings and foundation walls of brick, concrete and stone. Brick laying, joints in brick work, pointing, tuck pointing, etc. Brick and stone arches. Use of different kinds of stone.

Carpentry: Kinds and uses of wood's, cornices, interior details, framing, roof construction, bridging, miter joints, butt points, etc. How plans are made. Complete instructions illustrated by working blueprints of all kinds of buildings, private, public and business.

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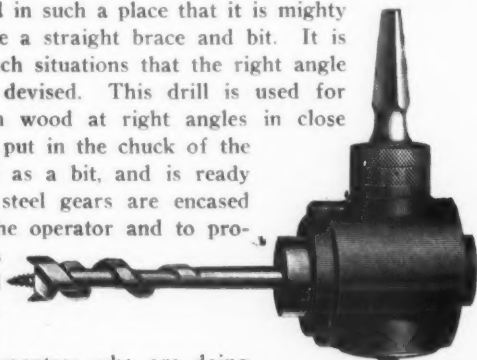


What Builders Are Finding Good

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Angle Drill for Boring Right Angle Holes

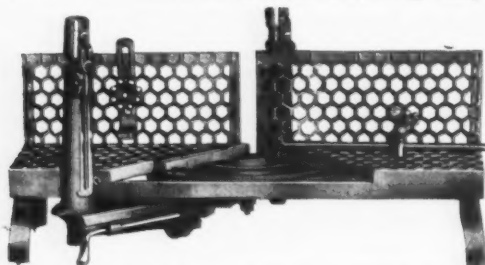
There are many times when the carpenter finds that a hole has to be bored in such a place that it is mighty awkward to use a straight brace and bit. It is to meet just such situations that the right angle drill has been devised. This drill is used for boring holes in wood at right angles in close quarters. It is put in the chuck of the brace the same as a bit, and is ready for use. The steel gears are encased for safety to the operator and to protect the gears from dust and chips. These drills appeal especially to carpenters who are doing remodeling work.



Angle Drill for Use in Boring Holes in Awkward Places.

An Openwork Mitre Box

The mitre box shown in the accompanying illustration is not only attractive because of its peculiar construction, but has valuable features that experienced carpenters will at once realize. For instance, it is perfectly dustproof. When a dusty piece of work is laid in the box, the dust will be cut off and it will fall thru the box, and the box is ready for other work. The stop and clamp gauges for holding the work securely can be attached to the plate or back at any place desired, and by them the operator is able to secure 60 to 70-degree cuts. The construction of the box makes it adjustable thruout, which is valuable for accuracy, and there is no chance of the back becoming warped out of true.



Mitre Box, the Sides and Floor of Which Are of Openwork, Permitting the Dust to Sift Thru.

If any of the parts wear out or become out of true, new parts can readily be put in their places. Sometimes a carpenter has work that he could do in a mitre box if the back were removable. This can be done with this box. The old method of fastening the box to the bench was to screw it down with wooden screws. This box has machine screws in its legs, so that any place it is

put it will stay without fastening. The swinging lever has an automatic stop and one friction stop, which makes it easy to lock the lever at any degree or fraction of a degree. The saw guides are exceptionally long and the stop gauges are slotted so that the saw will cut down to any depth desired. It requires nearly 7,000 pieces to make the patterns for this dustproof box.



An Open Center Auger Bit

Improvement on the tools long used by members of the building industry are frequent, and with each improvement



Auger Bit with an Open Center That Has Been Found Efficient.

they are made much more efficient. For a long time solid center bits were popular. Now comes one with an open center that disposes of the chip scientifically. It has an extension lip, commonly known as "the Jennings pattern," but the center is open, so that the chip is carried up and out of the way of the operator. The accompanying illustration shows the construction of this new bit, which first was used during the work at the army camps and in the navy yards.



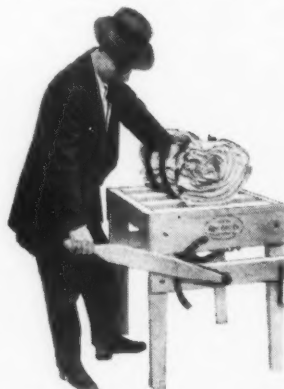
Putting a Marble or Granite Face on Concrete

A process by which concrete surfaces can be made to closely resemble marble or granite was devised some time ago, and since has been used with great success by concrete block makers, and manufacturers of other concrete materials for buildings. The composition art marbles and other faces are made for about one-fourth the cost of the natural products. No machines are required for this work, the originator of the plan furnishing only instructions, which, when followed, enable skilled concrete workers, or bright apprentices to turn out these materials. Porch work, exterior and interior trim, fire-place materials, hall, vestibule and bathroom linings, art marble wainscote, wall or floor tiling and many other materials can be made by this process.



For Baling Cement Sacks

Contractors every season lose considerable money by not taking advantage of the opportunity of securing rebates from the manufacturers for the return of empty cement and lime sacks. It is an unpleasant job to bundle up the empty sacks by hand, and oftentimes they are tied so insecurely that some of them are lost.



Cement Sack Baler That Bundles Up the Sacks so That There Is No Less in Rebate When Returned to the Seller.

To enable contractors and other users of cement to prevent this loss, there is a cement sack bailer that is simple to operate, efficient and not expensive. It is shown in operation in the accompanying illustration. Bales of sacks put up in this bailer will stand rough handling during shipment and will reach the manufacturer in good shape, thus preventing deductions because of shortages or damaged sacks. Thus a good many dollars are saved.

The baler is strong in construction and simple to operate. The sacks first are well shaken, and then laid across the baler. By pressing down a lever, as shown in the illustration, the

Asbestone



How the popular price of Asbestone boosts your sales

ASBESTONE opens up for you a tremendous new market. Heretofore, price alone has prevented thousands of buyers from obtaining the splendid durability of a Johns-Manville Asbestos Roofing.

But now, the *popular price* of ASBESTONE roofing means that you can meet the demand of all these thousands of roofing users who believe in the superiority of asbestos.

For here is a Johns-Manville asbestos roll roofing that provides the weather-proof, fire-resistant qualities that asbestos alone can give—at a cost within the range of the common rubber types.

And, of course, our registration service and responsibility apply to Asbestone just as much as to the most expensive Johns-Manville Roofing.

Your sales are bound to go up when you can talk safety and economy, backed by Asbestone.

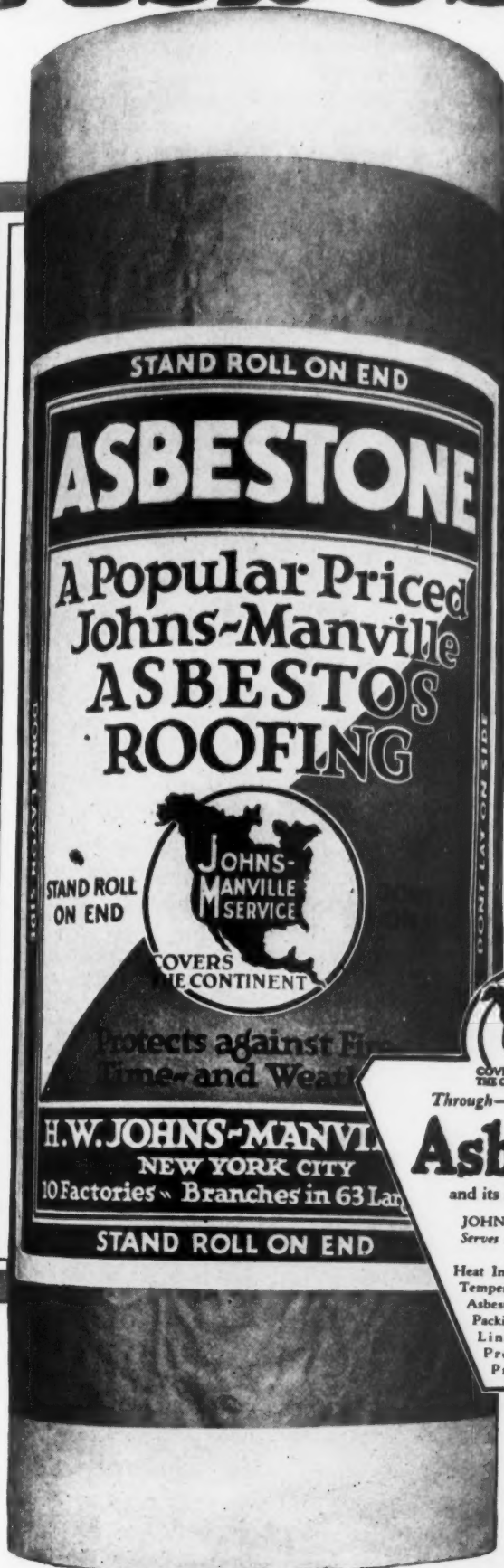
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ASBESTOS ROOFING

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

sacks are compressed, and the fingers of the baler hold them tightly while they are being tied.

Cement manufacturers have given their endorsement to this baler and urge that it be used to bundle up the sacks that are to be returned for rebate.

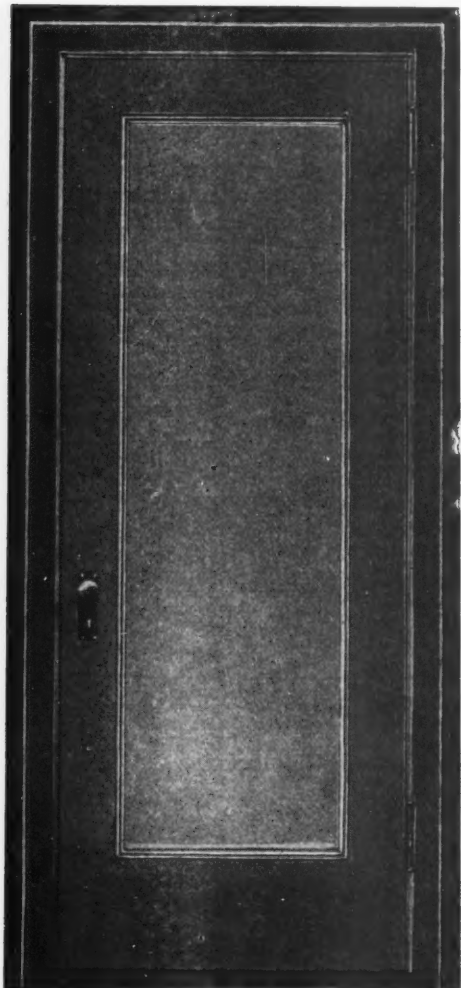


Fireproof Doors in Fireproof Buildings

A chain is as strong as the weakest link; a building is as safe as the flimsiest door. If there were no danger from fire, a great modern structure that houses a powder plant could be made of papier-mache or any other highly inflammable material. As it is, we are obliged to give as much consideration to safety as to usefulness.

The door is the valve, the window is the eye of the building. If they are well arranged, circulation from one room to another is easy and light is plentiful. But like the eye of man and the valve of his heart, they are also the most vital points in a building. If not substantial, the window may permit fire from within to burst out or that from without to burst in. The door being the thinnest point and therefore the first to be burned in case of fire, if it is made of wood, may serve as a veritable damper, drawing flames from floor to floor instead of holding them back.

Aside from its value as a fire retardant, the door shown in the accompanying illustration has other advantages that no wise builder can afford to overlook: It is an assembled door; there are no bolts, screws or rivets. Being made of white pine core covered with non-corrosive metal, it does not warp or buckle under fire. It is fitted out with a small sanitary moulding that gives it a neat appearance. The variety of types carried in stock, in panel as well as sash designs, eliminates the difficulty in matching other doors. A large



Modern Steel Door for Fire-Proof Buildings.

stock also assures prompt delivery to any part of the country. By the extensive use of machinery the cost of production is so reduced that a safe metal door can be manufactured at a price but little in advance of an unsafe wooden door.

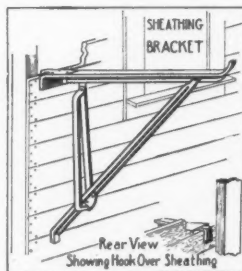
Standard fire doors, hollow metal window frames and sash are being made in any design that progress in architecture may demand. All of these bear, of course, the underwriter's label, which decreases the cost of insurance and renders insurance less imperative.

The door is not affected by temperature. It does not swell or sag. Locks, latches and hinges can be applied to same just as easily as to a wooden door. It is of standard size. It is as practical as it is popular.



The Why of the Sheathing Bracket

Most successful builders of homes have come to recognize the immense advantages and savings that are made possible by the use of scaffold brackets over the old-time wooden staging and scaffolding, but not all contractors have learned the big advantages of the sheathing bracket over the studding.



Showing How the Sheathing Bracket Is Attached.

How often in building a home is it necessary to leave up the scaffolding while the house is being lathed and plastered on the inside? It is not possible to do this when a studding bracket is used, but with the sheathing bracket one can go ahead and lath and also plaster the house without interfering with the scaffolding.



AN experienced and successful restaurant proprietor was being conducted thru a new and up-to-date kitchen. One of the fine things pointed out to him was a garbage chute within easy reach of the cook. He was being impressed with the labor this chute would save. "Ah," he exclaimed, "there is where your profits will go." It is bad policy to make it easy to waste materials, whether they be food or lumber.



BUSINESS buildings will take a strong place in the building activity next year. They are planned much farther ahead than homes, because they are matters of business. There are lots of such contracts to be had during the next four or five months.



A PROBLEM that is a "poser" to some is as simple as can be to another. If you don't believe it, read the Correspondence Department regularly. There will be found questions and answers to questions. And by studying both, you will learn many useful methods used by builders.

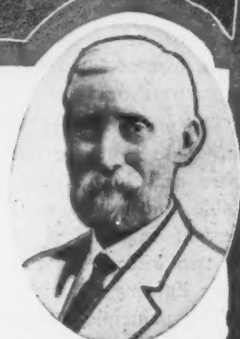


Steel Window Frames Are Used Extensively.

LOUDEN



Expert Service to CARPENTERS and BUILDERS



WM. LOUDEN, Barn Specialist
Over 50 years' experience

THE Louden Architectural department is in reality a **Service Department** of The Louden Machinery Company, comprised of experts devoted exclusively to planning barns. Much of the valuable service it renders is absolutely free. There is no charge for preliminary sketches and suggestions or for advisory service. Complete working plans and material lists are furnished at actual cost of production.

Let these men help you plan your barns. Show your prospective client suggestive sketches and blue prints specially designed to meet his individual needs. They will give you a decided advantage over less aggressive competition and help you land valuable contracts.

Get This Valuable Book of Barn Plans



Louden Barn Plan Book is not a catalog. Its 112 pages are devoted entirely to barn building. Shows 74 barns and other farm buildings with floor plans and estimated cost of each. Also many detailed illustrations and cross section views of floor and roof construction; chapters on drainage, ventilation, concrete work, lighting, etc.

Fill out and mail us the coupon, giving one or more names of prospective builders in your locality and we will send you this great book postpaid—no charge. We will also help line up the prospects for you.

The Louden Machinery Company

Established 1867

5531 Court St., Fairfield, Ia.

Branches: ST. PAUL, MINN.
ALBANY, N. Y. CHICAGO, ILL.

Write also for Louden Equipment Catalog

Shows the full line of Loudon Labor Saving Barn Equipment, which is indispensable to the profitable barn: Stalls and Stanchions, Litter and Feed Carriers, Animal Pens of all kinds, Detachable Water Bowls, Hay Unloading Tools, Power Hoists, Barn and Garage Door Hangers, Cupolas, Ventilators—"Everything for the Barn." Sent postpaid—no charge or obligation.

Louden Machinery Company
5531 Court Street, Fairfield, Ia.
Please send me, postpaid, without charge or obligation.

☐ Loudon Barn Plans

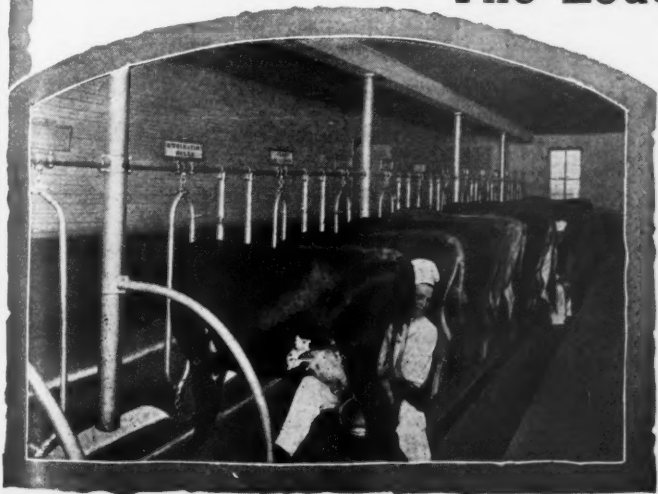
☐ Loudon General Catalog

Prospective barn builders in this vicinity are:

My name _____

P.O. _____

State _____





EDITOR'S NOTE: The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

Electromagnetic Nail Packing Machine

The desire of dealers, builders, contractors, carpenters, and others to have nails in rectangular packages instead of unwieldy kegs bids fair to be at last realized by means of an electromagnetic nail-packing machine. The nails, instead of being thrown helter skelter into kegs with consequent loss of space, are neatly arranged parallel to each other in cartons or boxes.

The machine used to pack the nails is highly ingenious though simple in principle and in operation. An inexperienced girl after a little training can in one hour put up from 600 to 2,400 pounds of nails in 10-pound packets. The electric current required is inconsequential, amounting to only one or two kilowatt hours for an eight-hour day and the ordinary lighting circuit can be used.

The principle of the machine is that linear iron objects



Electromagnetic Machine That Counts and Puts Nails into Cartons in Perfect Alignment.

when acting freely in a magnetic field take up the same direction as the lines of force. The machine has an arrangement by which the nails are allowed to fall thru the magnetic field and thus have an opportunity to take up the desired position. The nails are dumped into the feed trough in lots of about 1,000 pounds. A checking device causes them to glide into the circulating mechanism in which, while freely following, they take up parallel positions with almost mechanical exactness. By turning a lever the operator simultaneously cuts off the current and places the nails into a tray which is fixed between the two poles. A sheet iron tray then swings downward and the nails are emptied into the packet from it by a slight jerk.

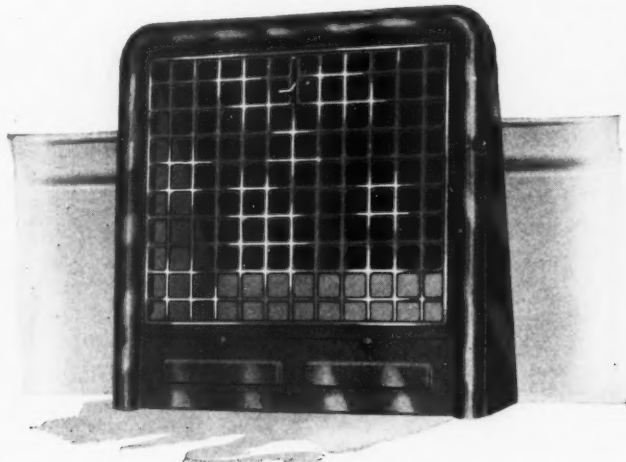
The advantages of putting the nails in cartons or packets are obvious. The dealer conserves his shelf space, and the consumer finds it very easy to store the packets in an economical manner. The reduction of freight bills, owing to the conserving of space in cars, is also considerable.

FRED TELFORD.



New Type of Baseboard Registers

The advantages of a baseboard register that has a detachable face will at once appeal to the home owner, and con-



An Attractive New Design of Baseboard Register, with a Removable Face.

tractors who sell and install furnaces find that such registers are in great demand. The accompanying illustration shows a new type of a baseboard register, with a removable face. It is handsome in design, comes in a variety of finishes and has a large free air area.

As will be seen, it has a plain lattice work front, which permits the warm air to escape freely. Set into the baseboard of the home, it gives good service and at the same time is not unsightly. This register was only recently placed on the market, but the manufacturer says that the demand already shows that it will be highly popular.



New Non-Breakable Hack Saw Blades

Since hack saw blades have come into such general shop use, manufacturers are cognizant of the fact that there is a vast difference in blade efficiency and consider the importance of selecting good, durable hack saw blades, as thoroughly as in the selection of files, twist drills, etc. A manufacturer has made a most scientific study of the proper steel for hack saw blades and by careful analysis has determined the exact alloy which lends itself to their patented hardening and tempering process, to give sufficient hardness and yet remain extremely tough.

These non-breakable blades are treated in special ovens

Murphy
Univernish
The Universal Varnish
Supplied Clear and
in six transparent
wood colors



Your Kitchen Under Glass

It is the wives and mothers who spend most time in a home, and, however much servants may free them from detail, their home-interest centers in the kitchen. They desire it spotless.

Murphy Univernish will completely satisfy your clientele. It covers porous woodwork in kitchen

or butler's pantry with a surface almost as hard as glass, impervious to grease, and one which hot water cannot injure or whiten. It beautifies *all* the rooms of a home, imparting to each the same spotless cleanliness. And Univernish is a Murphy Product — has definite prestige in the minds of thousands — for it typifies the finest quality of finish, attained by half a century's manufacture.

Please write us for specifications and samples

Murphy Varnish Company

FRANKLIN MURPHY, jr., President

NEWARK

CHICAGO

The Dougall Varnish Company, Ltd., Montreal, *Canadian Associate*



which present the same degree of heat for the same duration of the time to the proper portion of the blade as is applied when making the all hard blades. The final oil tempering is identical in all cases so that the saw blades have a very hard edge, and yet the special tempered back insures ductility. This is why they outlast all other blades. The liability to break or snap off is entirely eliminated. Particularly is this advantageous where it is necessary to use blades in out-of-the-way spots or in shop use where inexperienced help is employed.



New Hack Saw Blade That Is Declared to Be Unbreakable.

Special milling machines designed for the purpose mill the teeth on the blades. High speed milling cutters are used and are carefully inspected to make sure the teeth of the cutters are perfectly sharp and true.

insuring a good clean tooth in the blades.

Another point of extreme importance is the method of setting the teeth. This setting process is not done by the old style hammer method, which was found to be inadequate and which also subjected the blades to a shock, which was liable to cause crystallization; but the teeth are carefully pressed into their full set position thru a system of patented rollers.

This process does not bend a tooth at an abrupt angle, but rather gives a curve set to same, thereby presenting as much as possible of the face of the tooth to the material when the blade is in use. Whereas the old process presents the point of the tooth only, from which it can readily be seen that a much less cutting surface is used and, therefore, greater mechanical strain per tooth. The blades present a square point to the material being cut and thus have 25 to 50 per cent more cutting capacity.



Hollow Building Tile Construction

(Continued from page 104)

7 feet 6 inches plus 4 inches equals 94 inches, which divided by $5\frac{1}{2}$ inches gives 17.1 courses, or say 17 courses at $5\frac{1}{2}$ inches less 4 inches equals 7 feet $5\frac{1}{2}$ inches clear height of ceiling, basement floor to underside of joist (see Fig. 6).

In laying out the story height for cellars where a portion of the wall is to be above grade line, it is generally advisable to consider the relationship between normal grade line and top of footing and provide for cellar window frames of a size that will fit in with the courses of hollow tile and have sills above grade, unless areaways are to be used around these windows.

The question of joist and rafter bearings and the proper methods of fitting the tile around same to avoid all unnecessary cutting will be given in a later article.



LITTLE things are what count. The better little things are done, the better the big thing of which the little ones are a part will be. Doing every operation around a building well means that the completed building will be high class.



MAKE a careful study of best construction methods. Success lies that way.

Fred Beard Says—

(Continued from page 93)

in rented homes, but who are able to build a home, and should build a home. Get into their hands a good book of home building designs. Talk to them about building next spring. Get their ideas of what sort of a home they would build. Give them a line on what it would cost. Show them they can have a home of their own to live in and pay for it as they now are paying rent. In other words, do some cumulative advertising. Get them started early, and when spring comes and the weather breaks you will have contracts on which you can start. It will cost you a little money, and considerable time, but your increased business next season will return you the money you have spent and pay you for your time. That's a way you can keep busy and make money this winter. Make an aggressive and persistent campaign for building contracts during the winter."

"It's pretty hard to get a man interested in home building during the winter, isn't it?" queried Sam.

"Say," replied Fred, "anybody would think you were selling rubbers or umbrellas—that the only time people will buy is when it is raining. Building a home means study and consideration, and there is no season of the year when people have more time to consider house plans and ways and means of building than in the winter. What you've got to do, Sam, is to give 'em something to study and consider. What effect do you think a book with nice homes, set in pretty surroundings, will have on a man who has been battling with a worn-out furnace in a rented home on a winter's night when the thermometer registers around the zero mark? He'll want one of those homes for himself, won't he?"

"Will he?" exclaimed Ed. Maple, "Will a cat eat salmon, or will a fox terrier chase a cat? You have just ejaculated a hayforkful."



THE Correspondence Department is for the use of AMERICAN BUILDER readers. It is the medium by which the more than 42,000 members of the building industry who read the AMERICAN BUILDER may consult with one another. Questions are welcome, and also answers to the questions of others.



SIMPLE ways of doing things are best. Every building method was discovered by some builder and passed along to his fellows. When you discover a simple way of doing some necessary operation, tell your fellows in the building industry about it thru the Correspondence Department.



Fitting Treatment

"The fellow is a good worker, but he has such a temper he is apt any time to go off at half cock."

"Then you'd better fire him."—Baltimore American.



How She Showed Her Anger

George—"I told her I was going to kiss her once for every step of the way home."

Jack—"And what did she do?"

George—"Became very angry, but she went upstairs and put on a hobble skirt."—Pearson's Weekly.

LESS COAL ^{and} MORE SAGER

*That's the outlook
for this winter!*

Coal is going to be scarce and more expensive than ever. People are eagerly searching for a means of cutting their coal bills. Now is the time to sell the

SAGER INTERLOCKING PARTING BEAD

The weather strip that solves the problem in a new and different way. **A radical departure in weather stripping.**

Sager is the easiest strip on the market to install. The prices are right and you can make sure of a big profit by writing for our agents proposition.

*Send a postal now and be
ready for business.*



SAGER LOCK CO NORTH CHICAGO ILL

CORRESPONDENCE



Questions Answered and Ideas Exchanged.

You are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

How to Secure the Radius of a Segment of a Circle

To the Editor:

Kalamazoo, Mich.

I am submitting the following solution to the problem submitted by Morris J. Cole in the Correspondence Department of the September AMERICAN BUILDER. Mr. Cole desired to know how to get the radius of a circle, being given a segment, the chord of which is 32 feet and the sine 3 feet. Here is a formula I have used for years and I never have found anything better, and I am sure he will find it practical and correct. Here it is:

Multiply one-half the chord by one-half the chord, and divide by the sine. Add the sine and divide by two. Thus in Mr. Cole's problem, this formula works out as follows: 16 times 16 equals 256. Divided by three equals 85 feet 4 inches. Plus three totals 88 feet 4 inches. Divided by two is 44 feet 2 inches, the radius of the circle.

G. HENDRIKSEN.

A Similar Method of Getting the Radius of a Circle

To the Editor:

Des Moines, Iowa.

In the September issue of the AMERICAN BUILDER just received I see an inquiry by Morris J. Cole, of Lethbridge, Alta., Canada, as to how to find mathematically the radius of a circle, the chord and height of a segment being given. In the *American Machinists' Handbook*, by Colvin and Stanley, I found a formula, which is the most simple and useful I have encountered. It follows:

The diameter of a circle equals one-half the chord squared, plus the height squared. In Mr. Cole's example the chord is 32 feet. The height is 3 feet. The solution is 16 multiplied

by 16 equals 256. Add 9, the square of the height, and divide by three, the height, the result being 88 feet 4 inches. Divide by two and the answer is 44 feet 2 inches, which is the radius of the circle.

I was so struck with the simplicity of this formula that I wrote copies of it and furnished them to all our carpenters. I trust Mr. Cole will find this formula useful, also.

J. E. BONNELL.

EDITOR'S NOTE—Emil D. Magems, of Harvey, N. D.; Aleta L. Finley, Hamilton, Ohio; S. I. Goode, Omaha, Neb.; Fred E. Lucas, Canton, Ohio; Lee H. Drake, Massillon, Ohio; William Banks, Durant, Iowa; Herman Lincke, Mitchell, Iowa; F. P. Sawtelle, Keene, N. H.; E. J. Wood, Watkins, N. Y.; T. Woods Sterrett, Fairview, Pa.; Henry A. Burr, Nashville, Tenn.; Albert H. Wick, Stanhope, N. J.; William Moyer, Allentown, Pa.; W. S. Grove, Penbrook, Pa.; J. A. Hill, Glenside, Pa.; G. Holt, Huntington, N. Y.; Wm. A. Schweikle and Felix E. McGrew, Pleasant Lake, Ind.; H. R. Seager, Maybutt, Alta.; Cecil G. Mount, Shelbyville, Ind.; P. C. D. Andersen, Omaha, Neb.; Chas. Hoskinson, St. Edward, Neb.; M. A. Case, Houston, Texas, also submitted the formula here given in answer to Mr. Cole's inquiry, and arrived at the same result.

The editor extends the thanks of Mr. Cole for the spirit of helpfulness shown by AMERICAN BUILDER readers.

Asks About Concrete Floor Construction

To the Editor:

Peconic, L. I.

I have a building job about which I would like some information. It is a combination porch and garage to adjoin the rear of a house. The sketches show how it is planned. The

roof of the garage is to be the floor of the porch. The outside measurement of the garage walls is 19 by 20 feet, the walls to be either 8 or 10 inches thick. What I want to know is what size supports and bars should be used to hold up floor, and what thickness the floor should be to be watertight.

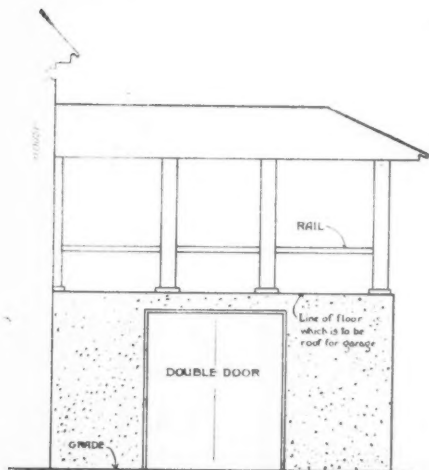
S. EDGAR TUTHILL.

Wants More Cottage and Small Bungalow Plans

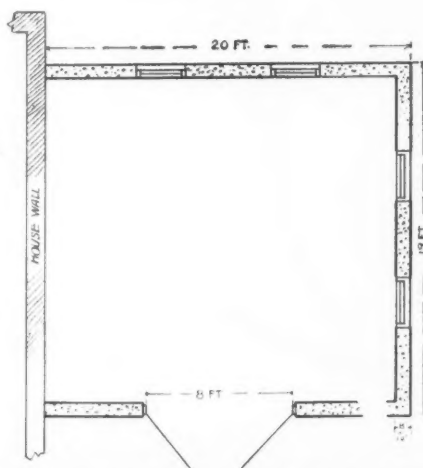
To the Editor:

Sturgeon, Pa.

I enjoy the Correspondence Department in the AMERICAN BUILDER very much and hope you will keep it going. I would like to see more small cottages and bungalow plans in the future.



Elevation of Garage and Porch Mr. Tuthill Wants to Build.



Floor Plan of Porch, Which Will Be Roof of Mr. Tuthill's Garage.

Dwelling at Wellesley Farms, Mass., Covered with Sta-so Slate Surface Roofing



Twenty-five years from now this Sta-so slate surfaced roof will have retained its natural color

You can tell your customers Sta-so will retain its original beauty; that its tints of rich Indian red and cool Sage green never fade, because these colors are put in by nature, not by man.

You can tell them that Sta-so lasts and lasts and lasts. It is weather resistant, besides minimizing the fire hazard, since neither dropping sparks nor embers will ignite it.

You can tell your customers that Sta-so Surface Roofing saves them money. Note these comparative average prices; Sta-so slate surfaced roofing costs $\frac{1}{3}$ that of tile, $\frac{1}{2}$ that of solid slate and usually less than the best wood shingles. As a Sta-so surfaced roof requires a lighter frame work, there is the added cost saving of the heavier frame work required for tile or solid slate.

Sta-so-Surfaced Roofing is adaptable for use on dwellings, churches, garages, office buildings and farm buildings. If you handle the roofing products of any of the manufacturers listed below, you probably are already handling Sta-so'd Roofing. But for your protection look for the Sta-so label on every bundle or roll of roofing you buy.

The Sta-so label may be found on the roofing products of the following manufacturers:

These manufacturers of roofing products bought enough Sta-so last year to surface ONE BILLION square feet of roofing:

Amalgamated Roofing Co. -	Chicago, Ill.	McHenry Millhouse Mfg. Co. -	South Bend, Ind.
Barber Asphalt Paving Co. -	Philadelphia, Pa.	National Roofing Co. -	Tonawanda, N. Y.
Barrett Co. -	New York, N. Y.	B. F. Nelson Roofing Co. -	Minneapolis, Minn.
Beckman-Dawson Rfg. Co. -	Chicago, Ill.	Pioneer Paper Co. -	Los Angeles, Calif.
Bird & Son -	East Walpole, Mass.	Reynolds Shingle Co. -	Grand Rapids, Mich.
Phillip Carey Mfg. Co. -	Cincinnati, Ohio	Richardson Paper Co. -	Cincinnati, Ohio
Flinkote Co. -	Boston, Mass.	Si Fo Products Co. -	St. Paul, Minn.
Ford Manufacturing Co. -	St. Louis, Mo.	Standard Paint Co. -	New York, N. Y.
The Heppes-Nelson Mfg. Co. -	Chicago, Ill.	Usona Mfg. Co. -	Aurora, Ill.
Keystone Roofing Mfg. Co. -	York, Pa.	H. F. Watson Co. -	Erie, Pa.
		A. H. White Rfg. Co. -	New Orleans, La.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

as they hit the working man. Would also like to see more designs for cabinet work.

JOSEPH GARDINER, JR.

Answer—The AMERICAN BUILDER each month has one or more bungalow designs. In this issue will be found considerable about cabinet work.

THE EDITOR.



Two Questions for the Steel Square Boys

To the Editor:

Mapleton Depot, Pa.

Referring to the sketch herewith, which shows a brace for any given run, say 3 feet, and running to the rafter, having a rise of 6 inches to the foot, I want to find the length of a brace and the cut that fits the pitch of the rafter. The cut for the end of the brace that fits the post is a 45-degree cut.

What is the cut at the point marked A?

Drawing That Shows the Problem S. M. Doyle Puts Up to the Steel Square Boys.

How can we get the length of the brace with the square? If the brace stops at the plate it would be 51 inches long, and the cut 45 degrees. What I want to know is how to scale the length of the brace with the square to pass thru the 3-foot point on the plate and reach the rafter, which has a 6-in rise to the foot, and how to fit the pitch of the rafter. The solution of this problem ought to work out equally well for a brace of any run and for any pitch.

Here is another problem: How can I mitre a hog trough for a square return, the sides being 12 inches wide, so that the edges of the mitre will overlap each other and insure solid nailing? I want to use the square to lay out the cuts.

S. M. DOYLE.



Some Thoughts About Barn Construction

To the Editor:

La Fargeville, N. Y.

I notice some interesting ideas in regard to barn construction in the correspondence department of your issue for August. It seems to me that the idea given by James Klostermyer for making a truss to prevent a barn from spreading when the cross beams are taken out would work fine if properly carried out.

It is a wonder to me that some one has not devised a truss to be built in with a barn roof straight rafters, so that it would hold the plates together and prevent spreading if the cross beams are left out; by this I mean some sort of bridge truss, set up just under the rafters or built up between them after the manner of a trussed partition. Of course, there would be one difficulty in that the roof would be on an incline and not vertical like a partition, but I believe that it could be worked out and made a regular style of barn construction like a plate truss and other features.

The thought by Mr. L. Klima regarding a vestibule on barns is also worth our consideration, for we cannot put rolling doors on an opening 8 feet square and have them tight in cold weather, altho the matter can be helped by using beveled stops and hooks or latches to keep them in place. Where the barns are already built it may be one cannot use the vestibule unless an entire bent or section is added to the barn. This can be done to good advantage in some cases by moving the end of the barn out a few

feet and filling in between and so getting in more storage space above.

In planning new barns or adding this vestibule onto those already built one could well have box stalls in the end, as suggested. This vestibule could be built as an addition, a sort of exercising shed in which could be a tank for water, in which case, even tho there was water in the stable, the cows might be let loose a few at a time and on good days allowed to go outdoors.

One thing is certain: The farmer of the near future will need, and have, better and more convenient buildings than now, with feed and labor as costly as they are at present. He can better afford to invest considerable money in good buildings which will enable him to save each year in expenses, rather than use up feed and labor to no advantage.

JOHN UPTON.



Asks About Re-Enforced Concrete Construction

To the Editor:

Paynesville, Minn.

I am preparing a bid on a building where one room will have a concrete roof, which will have a span of about 19 feet 6 inches by 19 feet 6 inches. The walls are to be of concrete blocks.

Could you advise me as to the best style of roof for this span and the amount of reinforcing required?

Will a flat, straight slab with sufficient reinforcing be strong enough for this span? The roof will have no weight to carry.

This is a great building season in this locality. I am building some of the best barns in this district. When the season work is closed I will send you a collection of snapshots.

E. G. OPITZ.



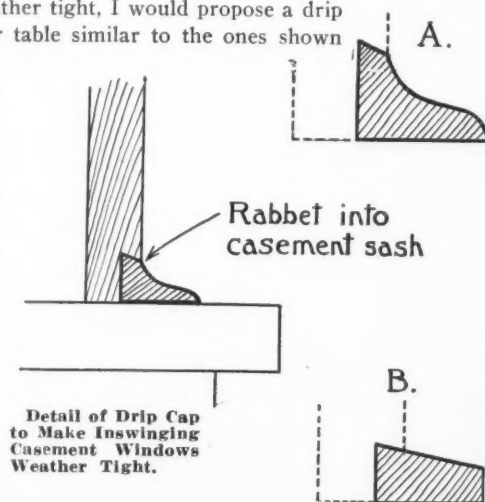
How to Make Inswinging Windows Weather Tight

To the Editor:

Saskatoon, Can.

In reply to the request of the Southern Pine Association for a method of making inswinging casement windows weather tight, I would propose a drip cap, or water table similar to the ones shown

in the accompanying sketches. Either A or B would no doubt suit the conditions stated, if when the moulding is put in place it is set in some good waterproof material, such as white lead. This will make a snug joint.



R. W. PRIMER.



Questions About a Concrete Silo Roof

To the Editor:

Winton Center Ill.

As I am a reader of the AMERICAN BUILDER I am coming to you for a little help regarding silo roofs. I wish you would answer these questions for me and send the answers



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MIDLAND TERRA COTTA

FOR MODERN BUILDINGS

Business winning storefronts,
self-renting apartment build-
ings and attractive structures
of every description are
assured through the use of
MIDLAND TERRA COTTA.
Perfect satisfaction guaranteed.

MIDLAND TERRA COTTA COMPANY

Lumber Exchange Building
Chicago, Illinois



of them to me as I am going to start putting the roof on soon.

How can I fasten the roof of a silo on a cement stave silo when there is not a thing to fasten to only the top edge of a silo which is cement.

How many asphalt shingles will it take on a gambrel roof silo 14 feet in diameter?

What pitch would look good on a silo?

How many feet of roof boards will it take laid close together?

What way would you advise me to go at the roof when there is not a scaffold around the silo?

All these questions are for a 14-foot silo, 40 feet high, with a gambrel roof.

FRED FICK, Carpenter.

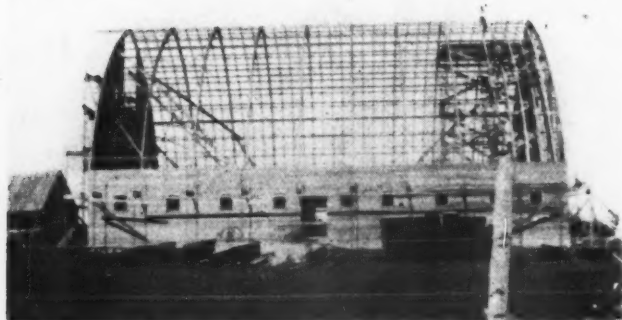


A Fine Round Barn

To the Editor:

Carrington, N. D.

I am sending you a barn to put in next number, 52 by 80



Round Roof Barn, 50 by 80 by 10 Feet, Built by J. T. Sines, Carrington, N. D.

by 10. It has a round roof and was built by myself.

J. T. SINES.



Can Anyone Help Merriman?

To the Editor:

Dana, Ind.

As I have been a reader of your paper for a great many years, and could not think of giving it up, as it has been of great help to me, but there is one thing that I could not expect to get out of your paper, and if you can be of any service to me in this case I will be very thankful for the same.

Owing to my health failing and having to go to a higher altitude, and I am advised to go to one of the following three states: Colorado, Arizona or Utah. I would like for you, if possible, to give me the names of some town or towns where there is a great amount of building and wages are good. I prefer a place where they build good buildings.

Any information you can give me will be very much appreciated.

C. H. MERRIMAN.



Wants More About Tile Work

To the Editor:

Tulsa, Okla.

I am taking this opportunity to ask you to print something about my particular line. I am well pleased with your paper up to this point, but feel you have neglected a most important factor in modern building. Today tile is being used in almost every building for floors, walls, ceilings, stairways, and fireplaces, for interior and exterior decoration.

You, no doubt, will understand my meaning and hoping you will give tile, marble and fireplace work a fair part of your paper, I remain.

MILTON W. COMSOLVO.



Wants Suggestions for Building Stairs

To the Editor:

Moran, Kans.

Which would be most appropriate, a closed string with shoe on top to carry balusters, or a cut and mitred string with balusters resting on treads? As treads will necessarily be only a trifle over eight and one-half inches, exclusive of nosing, how many balusters would you suggest? The stair is wanted finished rather plain, but will be paneled with wood below string. Would like suggestions as to style of rail and balusters, also detail drawing showing various designs and construction of paneling.

Thanking you in advance for any favors shown, I am,

H. R. FRASER.



How to Avoid Corner Cracks

To the Editor:

Emmett, Idaho.

I think the AMERICAN BUILDER is a fine paper, and it covers the building field quite generally. I don't see any articles on interior plastering which I think is an important item in building. Our method here is two coat sand finish, not a rough surface, but brought down to a true even surface composed of fine sand run thru a 16-gauge screen.

I see a query in your paper about corner cracks. There is only one way to avoid them and that is by wire. I use a fine galvanized wire. One cause of them is the corners are not square and the carpenter crowds the baseboard in to get a good joint, which will break any corner unless it is wired.

CHARLES TAYLOR.



Saving on Cost of Small Homes

To the Editor:

La Fargeville, N. Y.

The problem of J. E. Hull, in regard to getting together a modern five or six-room cottage for the least possible cost is one in which many of us are interested. Some of the plans published in this magazine would seem to meet some cases and the entire idea of industrial housing is helping to solve the problem of getting the workingman a livable home for a price which he can pay.

The space-saving bed is one feature which will help to cut down the high cost of living rooms. The elimination of a parlor helps some. Built-in furniture helps. Proper planning will prove a big item.

Keep the house nearly square, provide sleeping rooms on the second floor. The bungalow is all right if you have the first story of good height and the second story so that the ceiling will come a little above the plate. This will cut down the cost, first by making the side walls lower and by making less ceiling joists, and by requiring fewer yards of plaster than where the side walls go straight up and the ceiling straight across.

Another saving is to put the windows in groups. It costs only a little more to set a double window frame than a single one, and the less spaces there are between frames or openings the less it will cost for the labor and the material of sheathing, clapboarding, painting and for the interior finish.

JOHN UPTON.



Tip on the Steel Square

To the Editor:

Depauville, N. Y.

In answer to C. L. Lukens, concerning the cuts of rafters, etc., I will say that a Nicholls steel square, which is advertised in the AMERICAN BUILDER, is a whole book of knowledge in itself and by a little study of the rules which accompany

KELLASTONE

IMPERISHABLE STUCCO



Distinctiveness in Architecture

Something unusual—construction that's distinctive—that is what builds a contractor's reputation, and keeps profitable business coming his way. But he can't go far with his plans without taking the cost into consideration.

In these days of high prices of building materials it is more than ever essential that building construction combine economy and durability with artistic beauty. The real fulfillment of building ideals in these respects will be found in

KELLASTONE

IMPERISHABLE STUCCO

From a standpoint of both cost and distinctiveness KELLASTONE qualifies for every type of building. While maintaining its preeminent quality as the original, all-mineral magnesite stucco, its cost has risen less than 12% since 1913.

The artistic possibilities with KELLASTONE are unlimited. It bonds perfectly with any surface over which applied; will not crack, chip or crumble like ordinary stuccoes. Fire and water-proof; a perfect insulator against heat and cold.

KELLASTONE instantly appeals to all classes of builders—it affords you exclusive talking points without number. Ask us to tell you the details of our co-operative selling campaign.

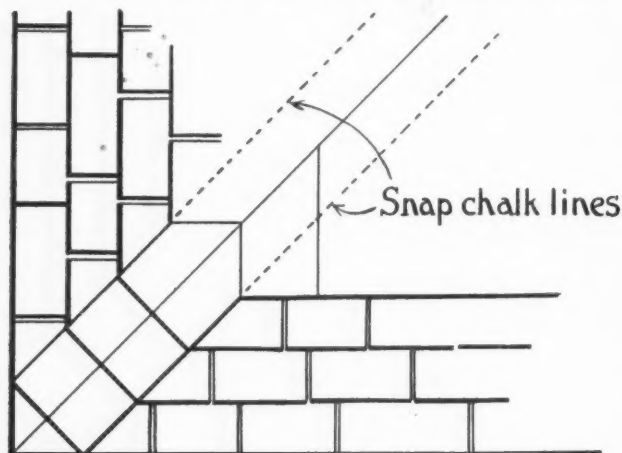
NATIONAL KELLASTONE COMPANY

1315 Mallery Building

Chicago

each square one can get the entire cuts for any roof. This is the best rule that I know about, and I would not part with my steel square at any price if I could not obtain another. I find it well, however, to know several rules.

The best rule to square a building is to use 10 feet as the



Showing Method of Shingling a Boston Hip Roof, as Done by H. O. Easton.

hypotenuse of a triangle whose sides are 6 and 8 feet.

To shingle a Boston hip roof, snap a line 4 inches from the point of the hip on both sides of the ridge. Then bring the corner of the shingles of each course to this line. When all thru with the plain shingling, make a pattern to suit. Cutting the top to shape, the butts will break the joints every time and the shingle will lie square with the hip line, as shown in the drawing. The plan shows the pattern for the hip shingle, and how laid. The dotted line shows how to snap the chalk line.

This is my first attempt to answer anything in the Correspondence Department, but I hope it will be of help to the AMERICAN BUILDER readers.

H. O. EASTON.



Asks for Designs of High-Class Furniture and Where to Secure the Lumber

To the Editor: Brooklyn, N. Y.

I desire information about designs for high-class furniture and the names of lumber dealers who can supply in carload lots all kinds of black walnut, walnut, mahogany and white wood, and veneers in all thicknesses and lengths.

MAX GLASER.



Chalk Line Inaccurate in Squaring a Building

To the Editor: Maybutt, Alta.

I notice that the question of how to square a building with a chalk line is answered in your September issue.

I wish to condemn that method, not because of its mathematical inaccuracy, because that part of the principle is correct. A line has too much elasticity, and accurate squaring cannot be done with one. Even a common linen tape line is not true enough on large buildings, for they stretch to a certain extent. A steel tape, or a woven metallic tape will do, but I consider a rod to be the best, and such a rod, when marked off every three inches, is a very handy thing to have on a building right from the start.

H. R. SEAGER.



Builds Huge Arena in Twenty Days

To the Editor: Bozeman, Mont.

I am sending you a panorama picture of our big "Wild West Roundup," showing some of the best riders on earth in the foreground. I had the contract for the seats in the back-

ground, which was a considerable job. The following description, taken from a local newspaper, describes the work well:

"No writeup of the big show would be complete without telling of the trials and triumphs which accompanied the building of the huge amphitheatre.

"On July 15, exactly 30 days before the opening of the Roundup, City Engineer Carl Widener, who had been engaged to superintend the construction, signed a contract with W. E. Walker, of this city, whereby the latter posted a forfeit of \$1,000 as a guarantee that the structure would be ready for the big show. At that time it was not believed possible to enclose the grandstand and the contract did not, therefore, include roofing that structure. On July 17 not a stick of lumber had yet been unloaded on the grounds north of the city, which had been purchased by the Roundup Association, but on that day, Bud Story, president of the Roundup Association, signed an order on Kenyon-Noble Lumber Co. for material with which to erect 50 standard bents of bleachers. From that moment things began to move.

"A power saw with a five horsepower motor was installed by Contractor Walker at an advantageous point on the grounds, every available carpenter and laborer obtainable was organized into a working army, and the amusement city proceeded to unfold itself like magic.

"The general scheme of the bleachers was some 300 bents, the standard being a string of three 2x12 timbers 12 feet long and placed at an elevation of 34 degrees, the back or high part of the bleachers being 22 feet above the ground, and the front seats nearest the ring being eight feet high. Each timber is supported by four posts. The bents are six feet on center and are braced in every direction to hold a 20 to 1 load. That this engineering calculation was perfect is shown by the fact that despite the tremendous crowd, the huge stadium never quivered.

"The grandstand, which has a seating capacity of 2,800 people, was designed and the construction of the same superintended by Prof. W. R. Plew, head of the architectural engineering department at the State college, and is a thing of awesome beauty. It is easily four times as large as the grandstand at the fair grounds and the view therefrom not only embraces every nook of the exhibition ring but includes a magnificent panorama of the stately Bridger range of mountains. It is a sight to thrill the soul of an artist.

"As stated before, it was not a part of the contract to roof the grandstand at this time. Contractor Walker, however, found his crew of workmen equal to the task and, while the permanent roof was not completed, the stand was completely enclosed.

"There is little doubt that in the magical construction of this plant Mr. Walker has established a record for speed and accuracy in building that will stand for a long time. Less than 20 actual working days were consumed and, aside from some slight labor difficulty experienced because of the demands of the local union leaders, no serious delays were encountered.

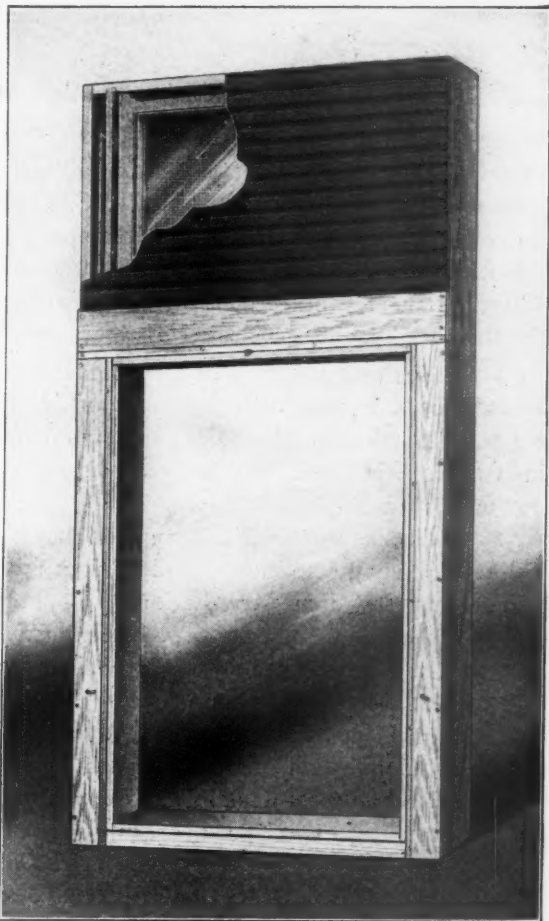
"Some idea of the hugeness of the big plant may be had when one contemplates the material used. Nearly 400,000 feet of lumber was checked to the ground; 100 kegs of nails of all sizes; thousands of pounds of bolts, washers, hinges, locks, woven wire and other articles were used. These would load several long freight trains to capacity.

"Nearly a mile and a half of sill line was lined up, and 1,200 posts were blocked up, supporting the bleachers alone. At one period of the operations bleacher bents were raised at the rate of one every eleven minutes.

"The only accident to mar the operations was that to J. Paul Walker, son of Contractor Walker, who lost a part of his left hand while operating the power saw.

"On the whole, the feat of constructing such a plant in 20 working days, oftentimes handicapped by a lack of material,

THE LUNKEN UNIT-WINDOW



The frame forms a safe shipping package for all parts of the window in their respective places. The stiles, sill and boxhead are protected by sealing boards to be removed after the frame is set.

The Contractor's Opportunity

**LESSENS WORK ON THE JOB.
SAVES TIME. SAVES MONEY.
MAKES WINDOW BUILDING EASY.**

THE LUNKEN UNIT-WINDOW has been completed *before* it reaches the contractor. The glazed, weighted sash are hung in place. The copper cloth screens are fitted and in the boxhead to be lowered like the sash. The copper weather-stripping and the hardware are attached.

Even the wood is primed. The Unit-Window can be set in the wall in practically the same time required for an open frame, but—the Unit-Window right then, is ready for use.

The contractor avoids window building worries, disputes and delays. The responsibility for a first-class job is

centered upon a nationally-known firm—not divided among several workmen of possibly varying skill.

Each installation of Lunken Unit-Windows has made a friend of the contractor.

THERE IS A MESSAGE IN THIS FOR BUILDING SUPPLY DEALERS

Write us for full information. Our Service Department is at your command in the development of your plans.

THE LUNKEN WINDOW COMPANY

UNIT-WINDOWS

Executive Offices and Works:
NEW YORK: 512 5th Avenue

4022 Cherry Street, CINCINNATI
CHICAGO: 175 W. Jackson Blvd.

(See Lunken Unit-Windows on display at the Architectural Samples Corporation, 101 Park Ave., New York, and at the Building Material Exhibit, 175 W. Jackson Blvd., Chicago.)



Some of the Rough Riders of Bozeman and a Portion of

should be a source of as great pride to Mr. Walker and his men as it is of wonder to the people of Bozeman."

I had hoped to have a better view of the arena than the one sent, but there is no eminence high enough to photograph it from.

W. E. WALKER.



Uses Hand Saw Forty-Nine Years

FEW carpenters who are rounding out a half century in the building business can boast that they still are using tools that they purchased shortly after they began work at their trade. However, T. R. McCormic, whose home is at Wahkon, Minn., holds this record.

At the request of the Editor of the *AMERICAN BUILDER*, Mr. McCormic had his picture taken at work with the saws that have been his daily companions for many years. Of the photograph, which is here reproduced, Mr. McCormic says:

"I am sending you a picture of myself and three of my Henry Disston & Sons saws, which, I believe, are



T. R. McCormic, Contractor and Builder, Wahkon, Minn., and the Saws That Have Been on the Job with Him for Many Years. The One He Is Using Is 47 Years Old, and the One Leaning Against the Lumber Is 49 Years Old.

the Bleachers W. E. Walker Constructed in Record Time.

older than most saws get to be. The saw leaning against the timber I bought from T. C. Cockran, of Sheakley Mills, Pa., 49 years ago. The one in my hand I bought from Samuel Gardner, of Jamestown, Pa., 47 years ago, and the 16-inch back saw leaning against the trestle I bought of Gardner 46 years ago.

"The saw that I use most of the time now is a No. 8 straight back Disston that I bought of H. P. Webb & Co., of Sandstone, Minn., 23 years ago, but my son-in-law, R. J. Millents, says my oldest saw is the best one on the job.

"I would like to see the man who has got more old saws in good condition and older than mine."

The first saw that Mr. McCormic bought now is worn as thin as a compass saw, but he can set it as well now as when it was new, and it performs its duties in excellent shape. Mr. McCormic says that after he had been working at his trade for a year, he gave away his cheap tools to a farmer and bought his first good saw, paying \$4 for it. The best tools are the cheapest, he holds, and his experience proves it.

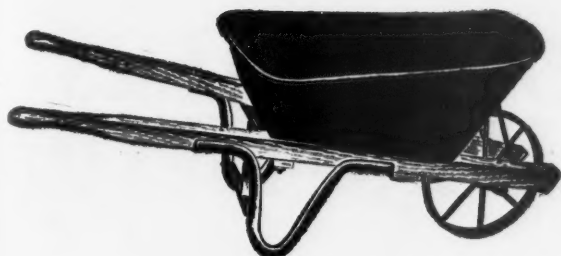


"Service Sheets" Valuable to Architects and Builders

The drawings illustrating the article, "Slate Roofs and How to Lay Them," printed in our August issue, were reproduced from "Service Sheets," prepared and published by the Architectural Service Corporation, Philadelphia, Pa. "Service Sheets" are detailed data sheets showing the uses of up-to-date building materials and specialties. They are not only exceptionally well drawn, but also unusually accurate, for they are prepared jointly by the architectural or engineering departments of the various prominent manufacturers and the technical department of the Architectural Service Corporation.

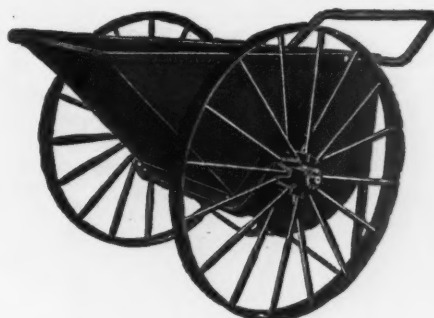
Additional "Service Sheets" are published quarterly covering new subjects (all carefully cross-indexed) and in this way a comprehensive *working* library is being built up on the cumulative plan.

Among the most interesting subjects in the complete collection of "Service Sheets" are a dozen sheets showing complete details of the use of reinforced concrete in constructing various types of buildings and parts of buildings and other structures such as inclosure walls, swimming pools, water storage tanks, etc., etc., other "Service Sheets" give details of the application of asbestos shingles, corrugated asbestos and glass roofing and siding, flat slate roof, tin roofs laid with flat and standing seams and ribs over battens with life-like color suggestions for painting—while a particularly interesting sheet shows how to build roofs and apply wood shingles to give a thatched roof effect. Most of these sheets show complete details of flashing, gutters, valleys, dormers, vents, etc., etc.



F-4, Lansing Mortar Barrow

Just the thing for contractors, cement and concrete workers. It carries a man's load of wet or sloppy concrete. Its tray is made of No. 15 steel and measures 28x36 inches on top and 20x21 inches on bottom, with heavy rod rolled in edge. Its handles are heavy and are made of selected hardwood. Legs and braces are constructed of angle steel. It has a heavy steel wheel.



K-4, Lansing Concrete Barrow

Our latest model concrete barrow, capacity 7 cubic feet, built especially for the contractor who discriminates in favor of first class labor-saving equipment.



F-3, Lansing Steel Tray Barrow

This barrow is the contractor's favorite. It has angle steel legs and braces and is particularly adaptable for hauling brick, stone, sand gravel or any dry or semi-wet material.



F-2, Lansing Mortar Barrow

An excellent barrow for mortar or wet concrete. It is built with angle steel legs and braces. Its tray measures 26x34 inches and is made of No. 16 steel reinforced at corners. Capacity 3 1/2 cubic feet.

Oversize Construction Accounts for Long Life of All Lansing Barrows

For nearly 40 years we have been building wheelbarrows for contractors—wheelbarrows that are built heavier than necessary—that are designed and constructed to stand up under rough abuse.

Lansing Steel Tray Barrows have rods rolled in the edges of the trays, instead of having the edges merely bent over. Either riveted or pressed steel trays are furnished.

Our contractor's barrows have steel shoes to protect the legs where the wear is greatest. The legs are bolted—not clamped to the handles of the barrows.

The handles are made of the very best Michigan hard woods.

With wheels operating in iron lugs—and with cast iron hubs in which are placed steel bushings, Lansing barrows carry capacity loads with the least possible effort on the workman's part.

Then, too, Lansing barrows are easily dumped because the extended handles enable the load to balance itself.

Let us send you our catalog showing our complete line of Lansing Wheelbarrows.

LANSING-COMPANY
22 North Cedar St. Lansing, Mich.

BRANCHES:

New York
Minneapolis

Philadelphia
Kansas City

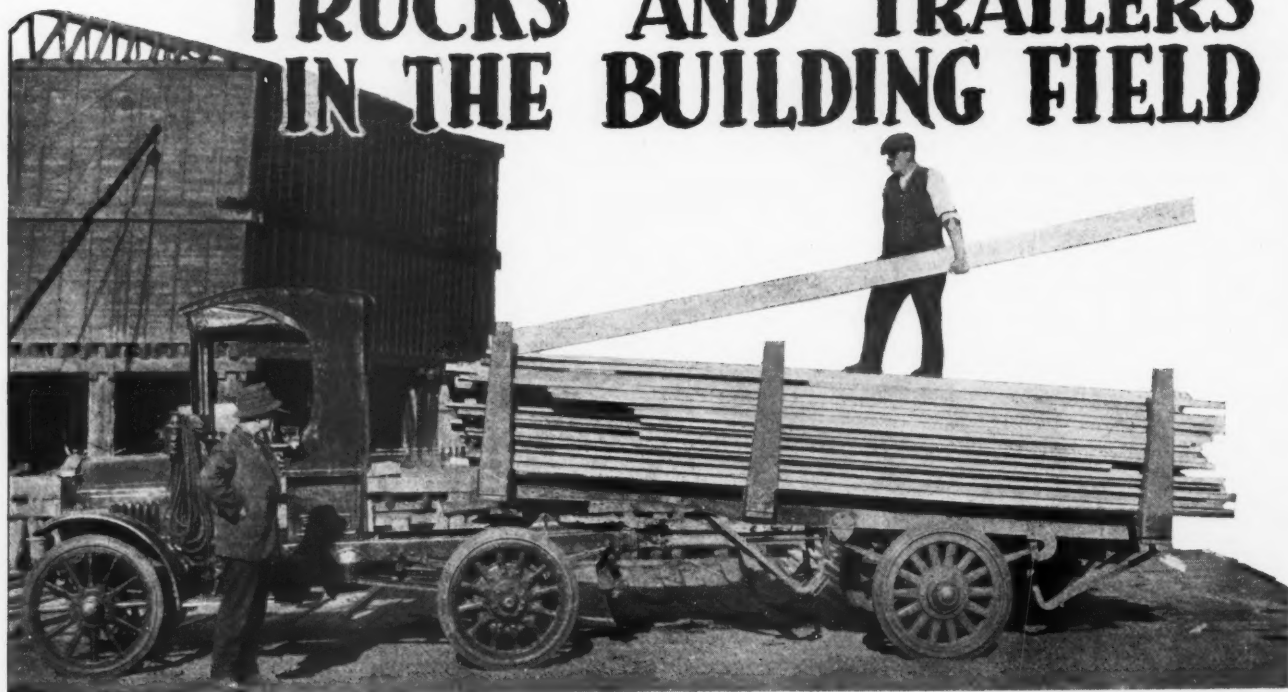
Boston
San Francisco

Chicago



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

TRUCKS AND TRAILERS IN THE BUILDING FIELD



Trucks and Semi-Trailers for Lumber Dealers

IN order to demonstrate to its own satisfaction that the use of motor trucks for hauling lumber is economical, the French Lumber Co., Lansing, Mich., made a comparative test with motor trucks and horse drawn wagons. The haul was eight miles and the load was 3,500 feet of lumber. The truck made two trips in a day, the costs being as follows:

Gasoline and Oil.....	\$2.53
Driver	4.00
Depreciation and Incidentals.....	2.00

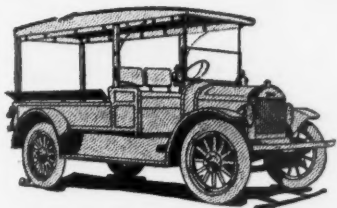
Total	\$8.53
Cost per 1,000 Feet of Lumber.....	\$1.22

The cost for making the same haul by team and wagon was \$4 per 1,000 feet, the price the company regularly paid. Each team made one trip a day and the wagons carried only 2,000 feet. It would have required four teams to duplicate the truck's performance. The total would have been \$28, as against \$8.53 by truck. Simple arithmetic will show the advantage



Here Is a Good-Sized Load of Lumber on the "Federal" Truck Employed by the Portsmouth Lumber Corp., Portsmouth, Va.

Stewarts haul the load for less



Model 11— $\frac{3}{4}$ -Ton Capacity Chassis—\$1195
Electric Starter—Electric Lights—
Magneto Ignition

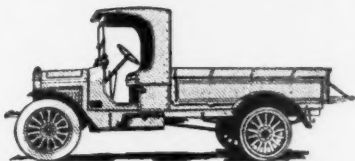
—Less in first cost

—Less in running cost

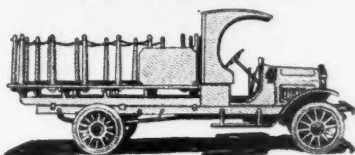
—Less in time lost

Stewart construction is simplified by eliminating all needless parts giving you a more economical truck and saving you considerable in first cost.

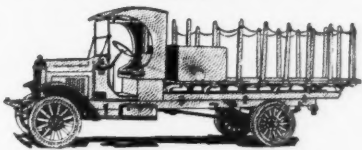
This means real economy in operation—less weight to wear tires and consume gas and oil.



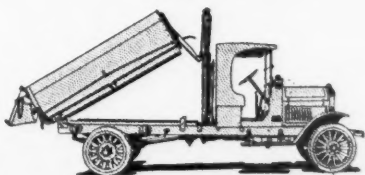
Model 8—1-Ton Capacity Chassis
\$1650



Model 9— $1\frac{1}{2}$ -Ton Capacity Chassis
\$1975



Model 7—2-Ton Capacity Chassis
\$2575



Model 10— $3\frac{1}{2}$ -Ton Capacity Chassis
\$3500
All Prices F. O. B. Buffalo

What One Builder says:

Concerning our two-ton Stewart Truck, must say that we are well satisfied with same as we used this truck all last winter through all the big blizzards carrying a fifty per cent over load nearly all the time.

As for service, we are well satisfied, as they render us service in the shortest possible time when it is required.

(Signed)

WM. FELDMANN, Bldg. Materials
Milwaukee, Wis.

Stewart's constant reliability is proved in over 500 American cities and in 27 foreign countries.

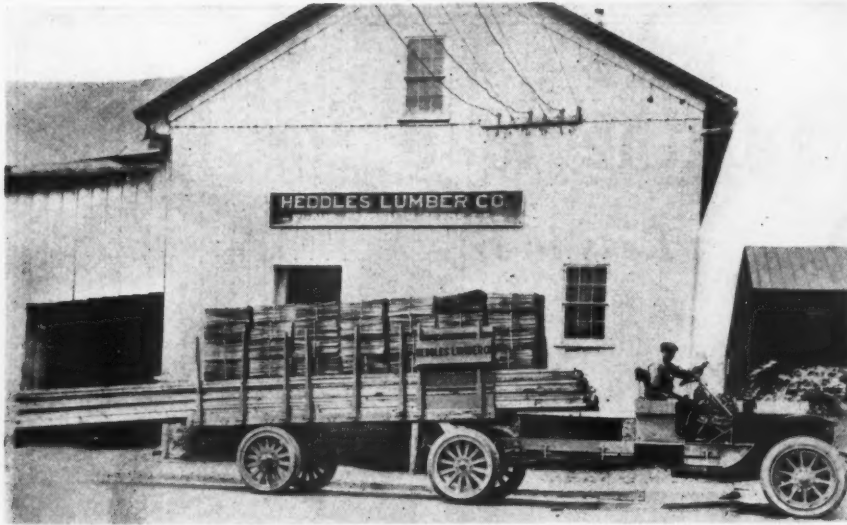
In 5 Years No Stewart Has Worn Out

Stewart

MOTOR TRUCKS

Stewart Motor Corporation, 428 E. Delavan Ave., Buffalo, N. Y., U. S. A.

Write for free booklet, "HOW TO CHOOSE A MOTOR TRUCK."



The Heddles Lumber Co., Edgerton, Wis., Employs a Two-Ton "White" Truck and a Four-Ton "Highway" Trailer to Haul Lumber. The Load Shown Here Is Composed of 24-Foot Lumber and Was Delivered Eight Miles Away from the Yard in Four Hours.

of doing the same hauling by truck.

It is such comparisons as the one cited that have brought the motor truck and trailer into popularity with lumber dealers. Not only do trucks and trailers cut the cost of hauling, but they make deliveries more quickly and give greater satisfaction to the customers. When a bill of lumber is wanted in a hurry, the truck gets it there on time. That is the sort of service that contractors and builders appreciate.

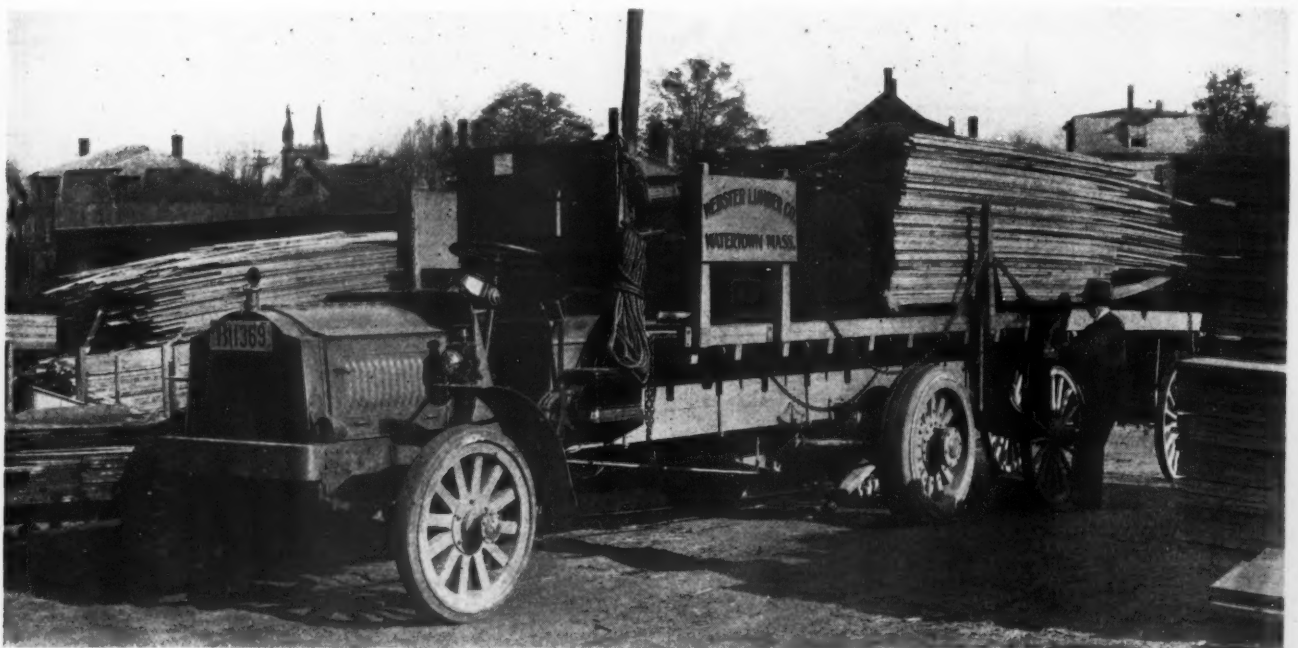
How Lumber Dealers Use Trucks and Trailers

The accompanying illustrations show how several lumber dealers use truck and trailers. The Portsmouth Lumber Corp., Portsmouth, Va., uses the truck shown for delivering all sorts of lumber and millwork to its customers. The truck here is shown with a load of lumber destined for a contractor outside the

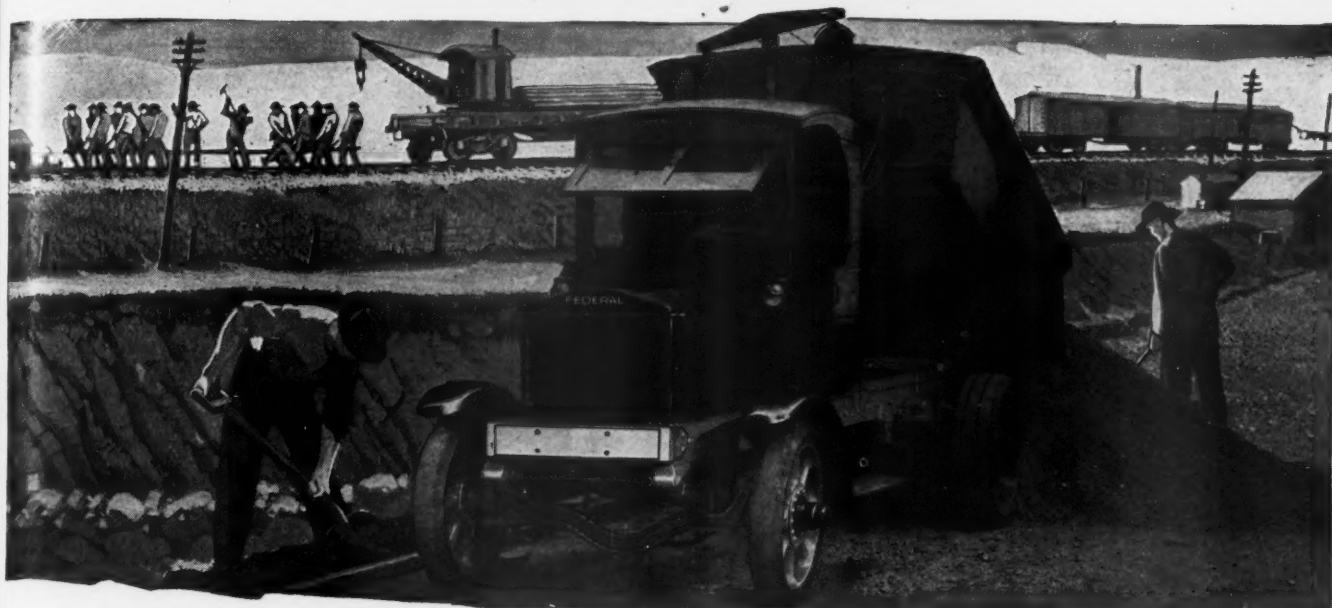
city. The power of the truck makes it possible to negotiate all sorts of roads, as it is equally capable of skimming over the city pavements and driving thru the heavy roads in the country around Portsmouth. The company has had its truck in use for a long time and it has given excellent satisfaction, both as to service and cost of delivery.

A heavy-duty truck, equipped with a body that is especially designed for the use of lumber dealers is shown in another of the illustrations. The body has rollers set part way into the floor. These permit full loads of lumber being taken on and off the truck in a few minutes. Here the truck is shown in the yard of the Webster Lumber Co., Watertown, Mass., backed up to a yard cart, which also is equipped with rollers. The cart was loaded while the truck was on the road delivering another load of lumber. When it reached the yard it was backed up to the cart; handles fastened to the rollers, and, as they were turned, the lumber moved onto the truck. When the truck reaches its destination, the driver rolls the lumber toward the rear of the truck, the back end dropping to the ground when it gets off center. Then the truck is slowly driven out from under, the front end of the lumber slides down a specially constructed tail piece and the truck is unloaded. This allows the truck to be kept in almost continuous operation, saving overhead expense.

The two other illustrations show trucks and semi-



A Practical Method of Loading and Unloading Lumber. The Load Is Piled on the Cart in the Yard While the Truck Is Making a Delivery and Then Is Quickly Transferred. This Is a "Packard" Truck with a Specially Designed Body for Lumber Dealers. Owned by the Webster Lumber Co., Watertown, Mass.



Shorten the Miles to Market

Thousands of additional miles of good roads are an imperative necessity during the nation's Reconstruction Period—

Paved highways to replace worn arteries of commerce—new roads blazed across lands and fields traversed until now only by rutted wagon trails.

In the national road improvement program now being fostered by the government, Federals are playing a big and vital part.

Brute strength—consistent service—day-after-day dependability and low operating cost are so nicely balanced in the truck's construction that Federals are to be found wherever the big jobs of better road building are in progress.

Federal "Traffic News," an interesting magazine on motor haulage, will be sent on request to responsible executives.

FEDERAL MOTOR TRUCK COMPANY
402 Federal Street, DETROIT, MICHIGAN

FEDERAL

One to Five Ton Capacities



BUILD NOW THE NATIONAL STATE AND COUNTY ROADS That Are Needed



U. S. DEPARTMENT OF LABOR

W. B. WILSON,
Secretary of Labor.

For additional copies address Roger W. Wilson, Director General, Information and Education Service, Department of Labor, 1700 O Street N.W., Washington, D. C.



A 1½-Ton "Packard" Truck with a Six-Ton "Fruehauf" Trailer, Used by the Hudson Lumber Co., Detroit. The Company Operates Four pieces of Hauling Equipment Like This.

trailers used for lumber dealers. The Heddles Lumber Co. employs a semi-trailer attached to a two-ton truck. Here it is carrying a load of 4,100 pounds of lumber and shingles. It was carried to a town eight miles away. The unit on which the lumber is loaded is capable of carrying four tons, and is 26 feet in length. The round trip of 16 miles was made in four hours.

The other illustration shows one of the four trucks and semi-trailers used by the Hudson Lumber Co., Detroit, Mich. This is a six-ton semi-trailer with a stake body. It was used to transport a huge load of shingles, and did it quickly and economically.

The fact that prosperous lumber concerns are employing trucks and trailers for their haulage recommends them to other lumber dealers who have not yet tried out this method of delivering materials to their customers.

Millwork Manufacturers Use Trucks

MOTOR trucks have taken a definite and leading place among the means of transporting millwork from the mill to the building job or to the dealer. Millwork is not heavy, but it is bulky. The vehicle to transport it need not be so powerful as those used for hauling other building materials, but the body must be of a character that will enable the truck to be piled high with sash, doors, window frames and other millwork. To cut down the cost of haulage per mile traveled, the truck must be speedy, so that it will be possible to cover greater distances.

The Mansfield Lumber Co., Pittsburgh, Pa., uses the truck shown in the accompanying illustration to deliver millwork and lumber. The stake body permits the company to put large quantities of millwork on the truck, which has both a powerful and speedy engine. Transporting a load like this over either city pavements or country roads at a speed of 15 miles an hour means economy in hauling costs, as one load is delivered and another taken onto the truck without loss of time of the truck and driver.

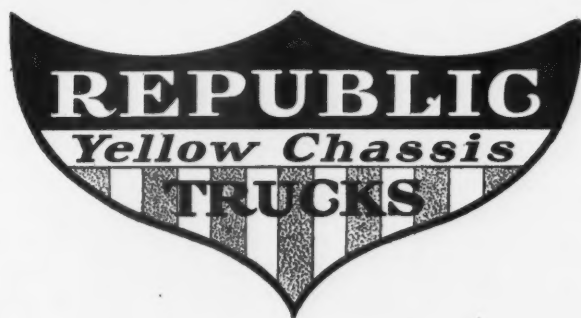
Speed, ability to carry heavy loads and the greatest mileage per gallon of gasoline are the three essentials that recommend a motor truck to the users. When this combination is secured haulage costs will be low and the truck will earn big profits on the investment.

Economical Hauling Equipment

THOSE members of the building industry—contractors and



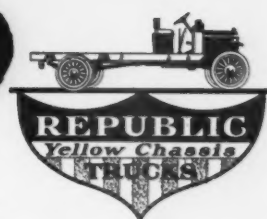
The Mansfield Lumber Co., Pittsburgh, Pa., Employs a "Federal" Truck to Transport Millwork and Other Building Materials. The Truck Here Shown Has a Large Load, But Handles It Speedily and Safely.



THERE is no getting around the facts about Republic Trucks: Republic sales growth has no parallel. Republic Trucks stand better, with more American business men, than any other. They are rendering heroic service to a greater number of businesses than any other. These simple facts have made the Republic Company, in six years, the largest manufacturer of motor trucks in the world.

Republic Motor Truck Co. Inc., 953 Michigan Ave., Alma, Mich.

REPUBLIC TRUCKS



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



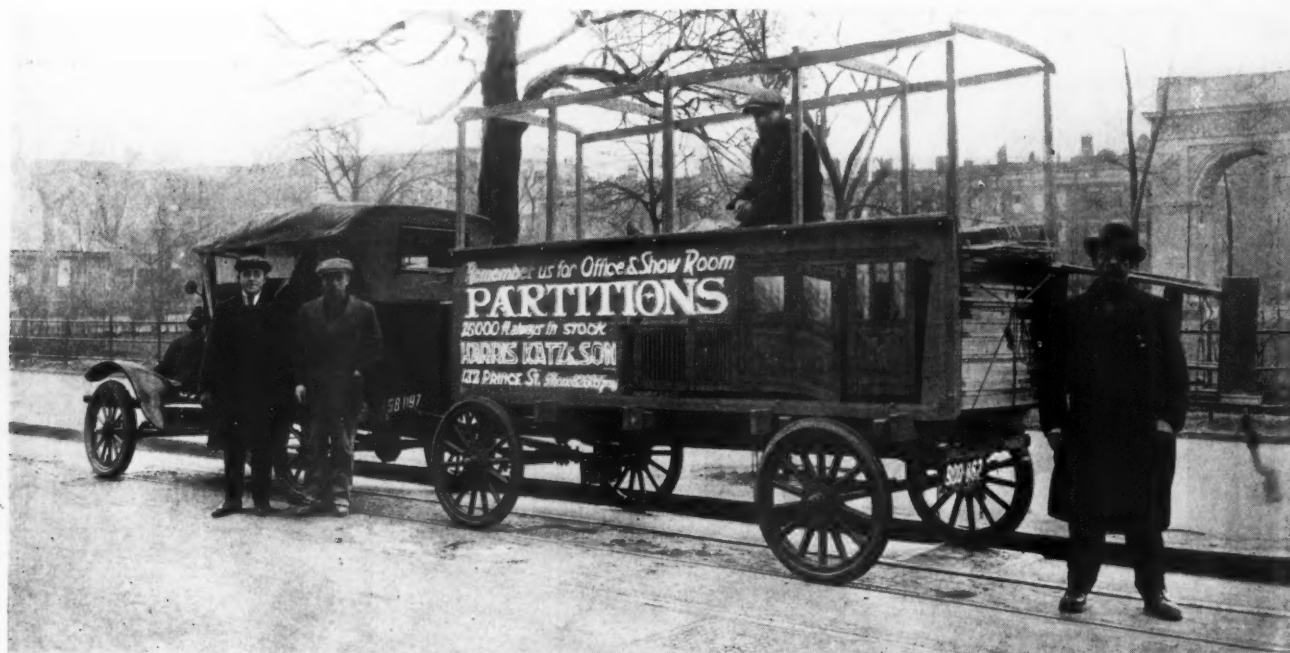
How Long Pipe May Be Hauled by the Use of Semi-Trailer in Connection with a Motor Truck Is Here Shown. The Rear Wheels of This "Miami" Trailer Are Supporting the Bulk of the Load, and Extending the Wheel Base of the Vehicle, so That There Is No Danger in Turning Street Corners.

material dealers—who own passenger automobiles, have the principal unit of an excellent piece of hauling equipment, as by securing a trailer it furnishes the motive power for a vehicle that will transport one or several tons. As it requires little power to haul a heavy load on a trailer and as trailers comparatively are not expensive, the combination of a low priced car and a trailer makes an economical piece of hauling equipment. And at the same time, the passenger automobile is available for the use for which it was designed.

How the most inexpensive of automobiles can be turned into a piece of equipment that will haul two tons is shown in the accompanying illustration. Harris Katz & Son, New York City, manufacture and install

the automobile at the rear, and can be detached as easily. It is the work of only a few minutes to convert the touring car into a vehicle that will haul a considerable amount of building materials, building equipment or mill work. Equipped with a special body, such as the one used by Katz & Son, the trailer will accommodate all sorts of materials and will transport a good-sized load, without overtaxing the engine of the automobile.

Trailers, of all sizes, ranging from one-half ton to six and seven tons, have solved the problem of economical hauling equipment, both in first cost and operating costs, for members of the building industry, who want a passenger car for business and pleasure, and to use the motive power for hauling equipment.



Harris Katz & Son, New York City, Specialize in Office and Show Room Partitions. They use a "Trailmobile" with a Special Body to Deliver Materials to the Job.

office and show room partitions. They use a low-priced passenger car for motive power to haul the two-ton trailer loaded with knocked-down partitions. Of the trailer, Mr. Katz says: "We cannot put into words the satisfaction this trailer is giving us. We have found that it will carry up to two tons, and is hauled by our small touring car. We have tested every part of the trailer and found that it is of the highest grade."

As will be seen by the illustration, the trailer is nothing more than a substantially built four-wheeled wagon, except that its axles and bearings are of the first class, and it is equipped so that its wheels will track perfectly with the wheels of the automobile that draws it. It is quickly attached to



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2 1/2 Gr

Buy One "Mutual"

(2 ton—3½ ton—5 ton)

Put it into your hardest service, side-by-side with the truck or trucks that you now consider to be the "best." Keep a careful record of its ton-mile performance, all costs counted.



"Yes, let us buy one 2 ton **MUTUAL** and watch its work. Their argument seems sound and their specifications are remarkably good."

MUTUAL—"America's Greatest Truck"

SOMEbody had to build "America's Greatest Truck"—for the time was ripe for another step forward in truck design, engineering and construction—a step toward greater endurance, better control and greater economy under heavy haulage conditions.

There were so many good trucks on the market that it was no small task to create a machine that would be recognized immediately by every competent authority as enough better than the best of the rest to justify us in advertising it as—

"America's Greatest Truck"

We chose the safe way—analyzing all modern trucks and studying the features that gave the most satisfactory service under the most exacting conditions.

Then we spent a year engineering these greatest units into one "super-truck"—adopting each unit in so large a size that the **MUTUAL** truck could always be safely given a

50% Overload

SPECIFICATIONS (2 Ton)

Comparing with most 3 ton trucks

Wisconsin 4x6 "three-ton" Engine.
Duplex Co.'s Duplex Governor.
Westinghouse Electric Starting and Lighting.
Hole-Shaw Universal Clutch.
Spicer Universal Joints—3 joints in shaft.
Fuller-Transmission (3 ton size). 4 Speeds and reverse.
Sheldon 2½ ton Worm-drive Rear Axle (built for 26% overload).
Sheldon Ball-Bearing Steering-Knuckle Front Axle.
Parish & Bingham Pressed Steel Frame.
Mather Chrome Vanadium Springs.
Bound-Brook Oilless Bushings. Thruout.
Smith Metal Wheels for Solid Tires.
Dayton Steel Wheels for Pneumatic Tires.
Goodyear or Firestone 36x4 solid front tires.
Goodyear or Firestone 36x4 solid rear tires.
Goodyear or Firestone Pneumatic Tires (extra).
Ross Steering Gear—20 in. wheel.
Perfex Radiator—Cast Tank Type.
Bosch Magneto—dust proof, water proof.
Stromberg Carburetor.
Powell Muffler—12 sections.
Weather-tite Cab, fully enclosed. Lazy back seat.
Electric Steel Castings—at vital points.
25 Gallon Gasoline Tank.
2½ Gallon Reserve Lubricating Oil Tank.

AND, after it was all completed, we figured our costs, adding only 9% for capital's share—and were pleased, mightily, to find that we could offer this truck at a remarkably attractive price.

How Can We Over-size, Over-power, Yet UNDER-PRICE the **MUTUAL TRUCK**?

Because our factory is strictly modern and our "overhead" low, with no excessive salaries.

And our financial burden is light, as we need provide for dividends on a relatively low capitalization.

For, our Company is, in a large sense, a community enterprise, in which the dominant purpose is to build a vast industry that will ultimately bring thousands of skilled workers to Sullivan County, Indiana, by making this county not only the home of "America's Greatest Truck;" but of America's Greatest Truck Company.

OUR Directors and Stockholders, include 500 wealthy farmers, stock-men, coal mine owners, proprietors of natural gas and oil properties and the leading business and professional men of the City and County of Sullivan, Indiana.

They realized that the way to build a great industry, quickly is to give truck buyers more for their money than they can secure in any other truck at any price. And, that, by building, in very truth—

"America's Greatest Truck"

and sacrificing their own immediate profits, as investors, they will all share in the permanent benefits of enlarged home markets for their products.

Every buyer of a **MUTUAL TRUCK**, therefore, gets the benefit of a county's ambition to make Sullivan the home of an industry that will soon cover acres of busy buildings.

Send for circular giving the super-specifications on which we base—and prove—our claim.

MUTUAL TRUCK COMPANY
Sullivan, Indiana, U. S. A.

Regular Equipment

Tho' our prices rule lower than are asked for high-class trucks of equal rating, and tho' the **Mutual** is oversized thruout we give as part of regular equipment many things that are offered only as high-priced "extras" by other truck makers including—

Electric Starting and Lighting.
Metal Wheels—costing us 55% more than wood.

34 x 8 rear tires, where others give 7 in. or 4 in. dual.

"Weather-tite," easy-seat cab, worth at least \$150 extra.

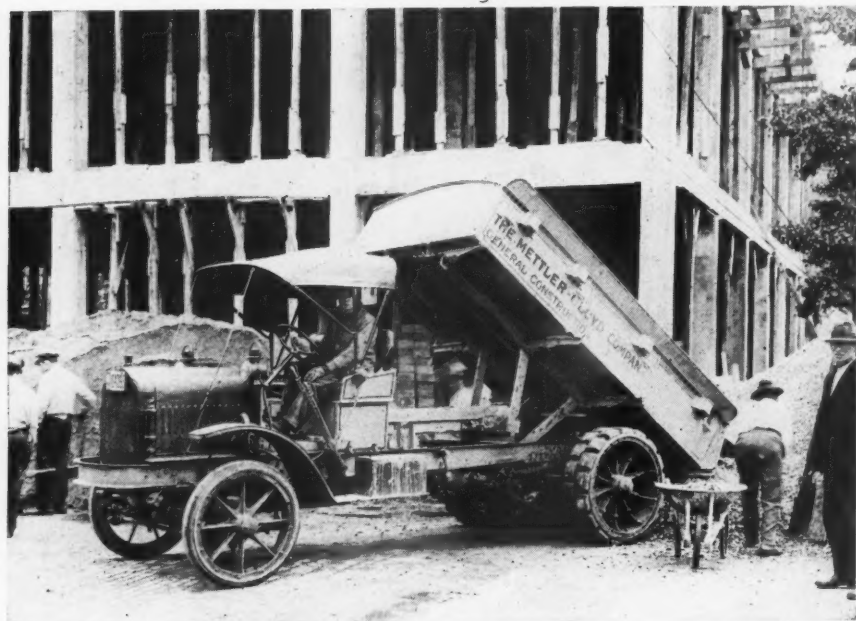
Over-size pressed steel frame.

Bound-brook Bushings.

Four Speeds forward and reverse.

Electric Steel Castings at vital points.

Reserve Lubricating Oil Tank.



Here is a 5-Ton "White" Truck, With a Special Dump Body, Especially Adapted to the Needs of Building Contractors. It Is Owned by the James R. Cloyd Co., Cleveland, Ohio, and Is Shown Delivering Materials to a Big Building Under Construction.

Semi-Trailers for Hauling Lengthy Materials

THE old-fashioned method of disengaging the reach of a wagon and fastening either end of it to the load when lengthy pieces of building material were to be transported now is even more successfully used when a motor truck is employed. Of course, the rear wheels of the motor truck are not separated, but a semi-trailer is added which permits the two to be loaded with long and heavy materials.

How well this plan works out is demonstrated by the illustration showing a heavy load of pipe being hauled along a country road. It will be noticed that these pipe are of different lengths, but all are so long

are to be hauled, the semi-trailer can be quickly attached and made ready for the load.

Hauling Heavy and Light Building Materials by Motor Truck and Trailer

CEMENT, sand, crushed stone and long, heavy timbers are what tax the hauling equipment of the building contractor and material dealer. The former materials are not so bulky as they are heavy, but timbers are both bulky and heavy. Wagons did good service when there was no other hauling equipment available, but they cannot be compared to motor trucks and trailers, either in the speed with which the materials were delivered or in the cost of delivering them.

That is why the motor-driven and hauled equipment has come into such general use among contractors and material dealers. Those members of the building industry who have a large amount of hauling to do quickly discovered that trucks and trailers were peculiarly adapted to their uses, and added motor delivery to their equipment; others are doing so and find that they cut one of the heavy costs of doing business.

How these trucks are used in delivering various materials is shown by the accompanying illustrations. M. A. Reeb has a staunch motor truck with which he delivers cement, sand and other like materials. His truck here is shown delivering its load to the building that is in the course of erection.



The "Pierce-Arrow" Truck Used by M. A. Reeb, Building Supply Dealer. Cement Is Heavy, and the Heavy-Duty Truck Here Shown Is Best Adapted to Hauling Such Materials.

Get the Idea of the Martin Method



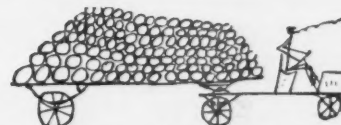
A horse cannot carry more than 1-½ ton



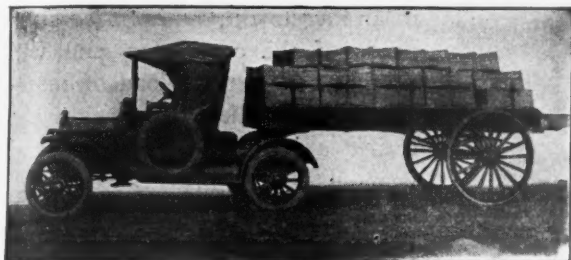
But can easily pull a ton



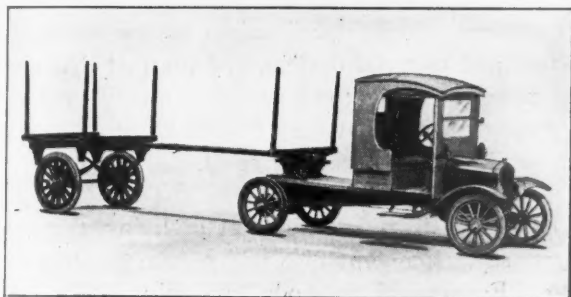
A runabout will soon break down under a ton strain



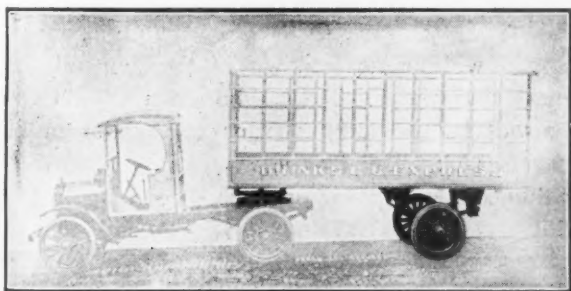
But the same runabout can easily pull 2 to 3 times its carrying capacity



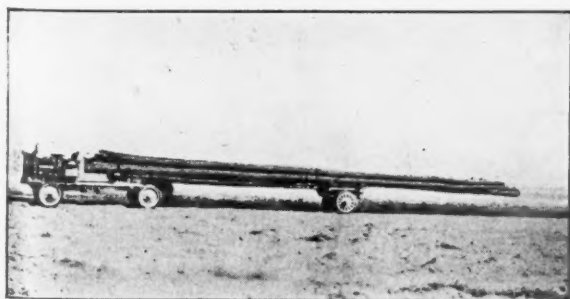
1-ton 12-foot Express Type Semi-Trailer



3-Ton Extension Type Trailer. This type is made in all sizes from one to ten tons



Showing how the Martin Fifth Wheel and Rear End Assembly are in effect a chassis ready to receive any kind of body



42-ft. Timbers on a Martin Extension Semi-Trailer.

THE MARTIN METHOD OF SEMI-TRAILER TRUCKING is ideal for the lumber business or building contractor.

IT IS the idle hours that make motor trucking costs climb. The MARTIN METHOD eliminates the time lost in loading and unloading, by releasing the truck. One truck can handle many of the Martin Semi-Trailer outfits.

THE BASIS of the MARTIN METHOD is the famous Martin Rocking Fifth Wheel, by means of which any wagon body may be converted into a Semi-Trailer.

BY USE of the trailer principle, a motor can draw three times the weight that can be handled if loaded directly upon the motor truck. The PULL beats the CARRY.

ONE MAN can handle the entire outfit, can "speed up" and make sharp and abrupt turns without danger of upsets.

THE INITIAL COST of installing the MARTIN METHOD is low, and it lends itself to every form of business. You could use it to advantage.

USE of the Martin Fifth Wheel guarantees perfect and easy traction over rough and uneven roads. There is no whipping from side to side.

WITH THE MARTIN OUTFIT, the load may be backed as easily as with a motor truck.

WHEREVER INSTALLED the MARTIN METHOD has reduced hauling expense and made it possible to cut labor costs.

YOU WILL BE INTERESTED in the Illustrated and Descriptive book on the MARTIN METHOD which will be mailed upon request.

Trailer equipment, 1-10 ton capacity.

MARTIN ROCKING FIFTH WHEEL COMPANY

P. O. BOX 1244B

SPRINGFIELD, MASS.



A Philadelphia Contractor Has a "Martin" Trailer, Specially Constructed to Haul Materials to the Job.

The Mettler-Cloyd Co., general contractors, Cleveland, Ohio, employ a heavy-duty truck, equipped with a dump body to carry crushed stone and other materials to the building job. How the motor raises the body and dumps the material in a few moments is shown by the illustration. The driver does not even leave his seat to perform the operation, that, before these bodies were devised took the time of several men. Such performances as this make the motor truck an economical vehicle to operate.

A small truck and semi-trailer, hauling two pieces of timber 12 by 14 inches, and 40 feet long are pictured in another illustration. The truck to which the semi-trailer is attached is a small one, but it has sufficient power to haul this good-sized load. The extension reach on the semi-trailer makes it possible to extend the third pair of wheels and get under the timbers and hold them in a horizontal position. This

takes the strain off the tractor.

In contrast with the other illustrations is the one showing how a Philadelphia contractor hitches a two-wheeled trailer to his light car by means of a rocking fifth wheel. The front part of the trailer is built up so that the lumber extends out over the heads of the occupants of the driver's seat. This hauling equipment does not represent much of an investment, but it answers the needs of the contractor, and will carry a considerable load of materials. The fifth wheel makes the trailer a part of the tractor and keeps its wheels in track.

Here are four uses to which motor trucks and trailers are put by members of the building industry. They demonstrate that trucks and

trailers are exceptionally well suited to the needs of contractors and material dealers, and the fact that the number who are using them increases every year is pretty good evidence that they do the work expected of them well, and save hauling costs.



ECONOMY will reduce the cost of living, the experts say. Economy also will reduce the cost of building. Economical methods not only enable the contractor to build for less, but give him an increased profit.



THERE will be no letdown in the demand for homes this winter. Those who did not build this summer will be considering plans for homes to be built next season. During the winter is a good time to get things lined up for an early beginning in the spring.



This Shows How Well Adapted the Trailer Is For Hauling Heavy Building Timbers. Two 12 by 14 Timbers, 40 Feet Long Are Being Delivered by This "Trailer-Truck."

Trailmobile

Trade-Mark Reg. U. S. Patent Office

Haul More; Most Conveniently

The Motorless Motor Truck

Thousands in Use

DIVISION No. 1
Light Four-wheeled Trailmobiles for use with passenger cars or light trucks. 1,250 lb. $\frac{3}{4}$ ton and 1 ton.

DIVISION No. 2
Heavy-duty Four wheeled Trailmobiles for use with trucks; 1 $\frac{1}{2}$ tons, non-reversible; 2 tons; 3 $\frac{1}{2}$ tons; and 5 tons, Reversible.

DIVISION No. 3
Trailmobile Semi-Trailers: 2 tons; 3 tons; 5 tons; and 7 tons.

A TRAILMOBILE drawn by a truck or passenger car is especially adapted to hauling lumber and other building materials. For light operations a Trailmobile and a light roadster are efficient equipment; many lumber dealers are hauling up to two tons with them in regular service every day in the year. They take the place of light truck.

Nearly all building materials take some time to load. And it is a great advantage to be able to leave the Trailmobile to be loaded while the pulling unit is busy elsewhere. Used in this way with truck or tractors the Trailmobile permits the pulling unit to be kept constantly busy.

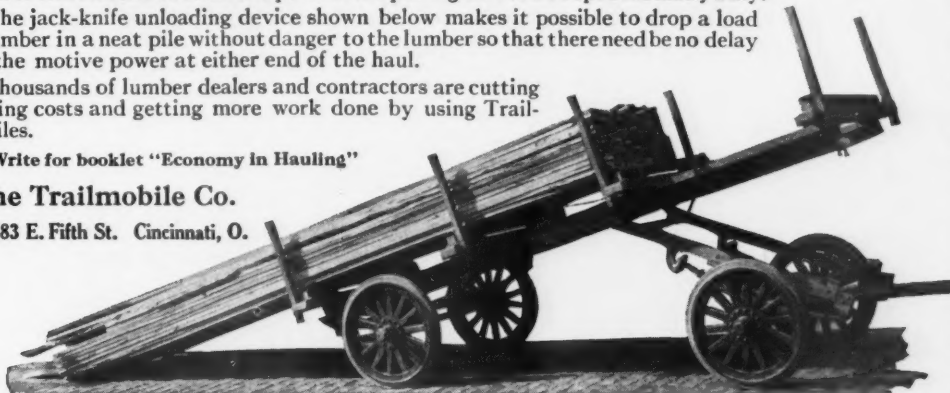
The jack-knife unloading device shown below makes it possible to drop a load of lumber in a neat pile without danger to the lumber so that there need be no delay for the motive power at either end of the haul.

Thousands of lumber dealers and contractors are cutting hauling costs and getting more work done by using Trailmobiles.

Write for booklet "Economy in Hauling"

The Trailmobile Co.

583 E. Fifth St. Cincinnati, O.



Good roads are preserved by reducing the load carried on each wheel



This is a MODEL 10 Miami Trailer

There Are 19 Other Models

Our catalog and pamphlets are fully illustrated and give you a clear idea of the trailer that is suited to your needs.

WRITE FOR IT TODAY

Capacity 2000 Pounds!

There is a Miami Model that will solve any hauling problem. Hook your Ford to a Model 10 and you've got a truck. Every part built right. Artillery wheels with solid rubber tires and timken bearings. Special shock reducing drawbar. Solid Oak and Poplar body. 72" wheelbase. Fully equipped with electric tail light. This trailer is worth investigating. Write us for prices and further details.

THE MIAMI TRAILER CO., Troy, Ohio

Installing Weatherstrips Is a Simple Operation

ANY EXPERIENCED CARPENTER CAN DO THIS PROFITABLE WORK

SOME carpenters and builders have the impression that the installation of metal weatherstripping on a building requires long training and an accumulation of mechanical knowledge. This is a mistaken idea. Accompanying this article are illustrations which show weatherstrips for double hung sash and casement windows in place, and a door equipped with a threshold strip. It readily will be seen that there can be nothing complicated about putting these strips in place. A little practice, and following the instructions of the manufacturers will make any practical carpenter or builder proficient.

Fig. 1 shows a simple pattern of single rib strip that fits into a groove made into the sash. This groove is made with a special plane and is furnished to the carpenter by the manufacturer. The single rib strip has been in use for over twenty-five years. The simplicity of it makes it efficient and easy to sell. It may be used with or without a lining strip. The majority of people prefer it without a lining because the metal slides easier when sliding into a smooth surface. Metal sliding against metal is likely to produce friction.



Fig. 1. A Simple Pattern of Single Rib Strip that Fits Into a Groove Made in the Sash.

Fig. 2 is a casement window equipped with zinc interlocking strip. The smaller hook fits inside the larger hook, giving perfect contact all around, and is especially designed to insure an air-tight water-proof window. The single rib strip on the inside fits into the groove the same as on a sliding window. This double hook strip is also used as a check rail strip on a sliding window, and is made of a very heavy gauge of zinc. With the use of special planes, the installation of it becomes very simple.



Fig. 2. Casement Window Equipped with Zinc Interlocking Strip.

Fig. 3 is a door equipped with spring bronze and brass threshold strip. This bottom strip consists of a brass bar and L strip. A strip of rubberoid is placed under the bar to adjust any unevenness in the floor. It also insures a tight and water-proof joint. There are no springs or

moving parts to wear out in this equipment, and being on the inside of the door, snow and ice cannot affect its working. The L strip has elongated slots to receive the screws which makes it easy to adjust to fit any door. This equipment because of its attractive appearance has become the selling feature of the weatherstrip business. Metal weatherstrip can be applied to fit perfectly on any kind or size of windows, doors or casements in any building or house.



Fig. 3. Door Equipped with Spring Bronze and Brass Threshold Strip.

The metal weatherstrip business is a "life saver" for the carpenter coming to him at a time when building is quiet. It works out a livelihood for him, and any carpenter with push and vim can make a success of this business, because very little capital is required; in fact, no money is necessary until the first order is obtained.

The manufacturers of weatherstripping have solved the construction problems of the carpenter and builder by making available a book written in easy-to-understand terms and based on the practical experience of expert weatherstripping mechanics. This book is full of ideas and helps the mechanic over the most complicated situations.



Building Activities Continue to Increase

The building contracts awarded during the month of August, 1919, in the territory north of the Ohio and east of the Missouri rivers, according to statistics compiled by the F. W. Dodge Co., amounted to \$267,261,000. This figure, altho 13 per cent under the total for July, 1919, indicates an increase in building activity of 63 per cent over the average for August of the five years previous to 1919.

The August figures bring the total amount of contracts awarded during the first eight months of 1919 up to \$1,565,489,000, which is a greater amount than has been recorded for the same period of any previous year. This figure is 40 per cent in excess of the average figure for the first eight months of the five years previous to 1919, if figures for those years be estimated in terms of 1919 building costs.

The figures for contract awards up to September first indicate a banner year in building operations. The crest of the curve was passed in July, but delays in operations, due to labor troubles, shortage of materials in certain localities, and other causes have occurred. Consequently, it appears likely that actual construction has yet to reach its maximum volume and that the building season will be necessarily prolonged as far toward the close of the year as weather conditions will permit.



Vulcanite

"FAMOUS for QUALITY"

Slabtile Shingles

STYLE "R"

Are Popular With the Trade Because—

1. They are self-spacing.
2. Ends fit snugly together, forming a closed top.
3. Quickly laid, saving time and money.
4. Are surfaced with crushed slate in its natural enduring colors of red and green.
5. Design is pleasing. Suitable for any style of architecture.
6. Double butt casts heavy shadows, accentuating the charming designs.
7. By arranging slabs differently many beautiful patterns are possible.
8. Fire-resisting qualities of asphalt shingles lower insurance rates.
9. Have given maximum weather and fire protection on thousands of buildings.
10. Price is within the reach of all.
11. Because one sale makes others.
12. Vulcanite Style "R" Shingles are honestly made—honestly sold—and give honest service.

Dealers — Contractors

Write for our "Dealer Helps." Let us show you how to increase your business.

Patent Vulcanite Roofing Co.

Chicago, Kansas City, San Francisco, New York, Cincinnati, Birmingham,
Minneapolis, Albany, Anderson, Ind., Franklin, O., Buffalo

Shall Contractors Charge a Fee for Estimating?

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA INVESTIGATE LONG-DISCUSSED SUBJECT AND PRESENT ARGUMENTS FOR AND AGAINST IT, ALSO DETAILS OF SEVERAL PLANS

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, thru their Committee on Methods, have been investigating the question of whether or not contractors shall charge a fee for making the estimate on which each bid for a building contract is based, or shall contractors continue to include the cost of estimating in their general overhead expense? Arguments for and against the proposal to charge a fee, and explanations of two plans for making such charge are contained in the September issue of the *Members' News Letter*, published by the association.

H. W. Nelson, president of *Moline Heat*, and author of "The Nelson Form for Choosing Bidders and Awarding Contracts," supports the plan to make a charge for estimating, while William Graves Smith, of New York, president of the Quantity Survey Co., opposes it. Both men offer strong arguments in favor of their stands.

In his statement, Mr. Smith says, in part:

"Estimating is a part of a contractor's work that by no method can be satisfactorily delegated to any outsider. No method of payment for it can in any way relieve him of the necessity of doing it for himself and for assuming full responsibility for the prices he offers for doing the various kinds of work required under any contract. There is undoubtedly considerable confusion among contractors in discussing payment for estimating due to its close relation to quantity preparation, and by many it is considered as covering both matters. There can be no escape from estimating expense; but there are ways which will be explained to minimize quantity expense in a very desirable and satisfactory manner.

"There is a sad misconception or disregard of 'overhead' on the part of many contractors. Some say, for example, that estimating expense comes out of 'profit.' If a contractor does not know what percentage of his receipts goes to pay for rent, insurance, interest, salaries for estimators, etc., or doesn't care to account for these items in his estimates as 'overhead,' it is a matter for his choice and decision. But if he does not account for his 'overhead' as a separate item in his bids, he should not complain if his so-called 'profit' is reduced by payment of such items.

"There must be competition. Anything permitting or leading to the development of a Building Trust will be disastrous to the interests of the majority. On Cost Plus Work even there should be competition for a Percentage Contract among acceptable builders to demonstrate their ability to give service. Service can only be measured ultimately in terms of cost. On the other hand, competition can only exist when uniform requirements are made the basis of competition. Anything else is speculation. Constructive ability and

management should be the winning and determining factor. Until they are and until a generally accepted minimum percentage of profit is demanded by all, the contractor's existence will continue to be a stormy one.

"Anything that decreases a contractor's 'overhead' or allows him to figure 'costs' more accurately, or gives him better opportunity to demonstrate his superior constructive and executive ability, without increasing cost to the building owner, is a good thing for both parties.

Payment for Estimating

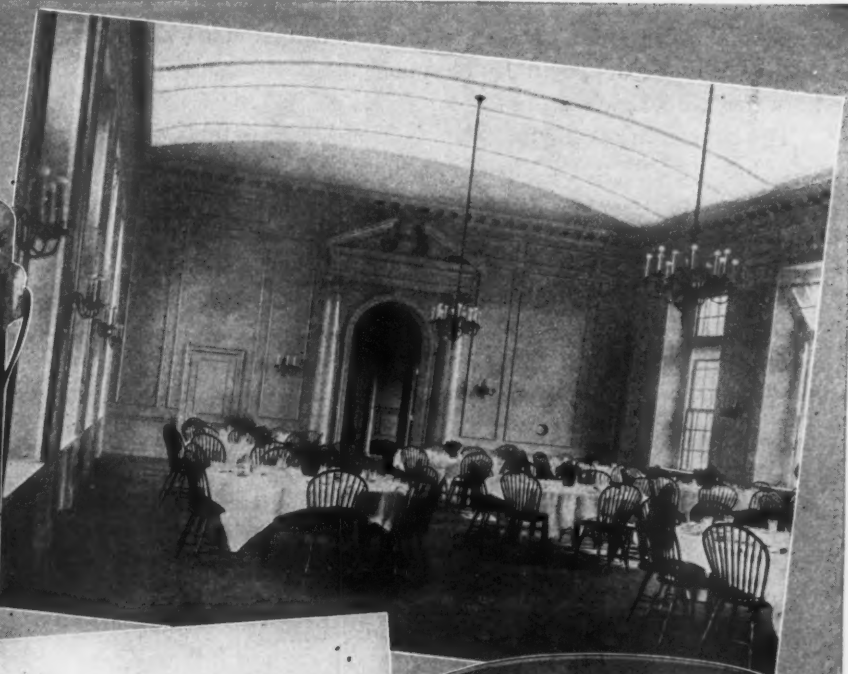
"Direct payment for estimating would not reduce a contractor's expense for same. His overhead would not be reduced, for a contractor would not be furnished anything that would reduce his labor or lessen his responsibility. It would simply change the method of re-imbursement and shift the burden of expense. Contractors that properly treat 'overhead' as something separate from 'profit' know that they collect in 'overhead' all of their estimating expense from the jobs they win. The building owner that gives them a contract pays for the estimating on his own job and on an average of about fifteen or twenty others that his contractor has bid on and lost, or which did not go ahead.

"This may seem a hardship to building owners, but looked at from this standpoint, it is not a hardship to contractors. There are, however, many reasons why estimating expense cannot be satisfactorily paid for job by job with any hope of the building owner reaping any benefit financially or otherwise."

Mr. Nelson's Plan

Mr. Nelson takes the stand that "estimating costs and establishing prices is an overhead expense involved in any merchandising, but the cost of doing so is generally nominal, if not insignificant, and can be justifiably distributed. The cost of estimating work to be performed in accordance with special specifications to meet each case, however, differs materially from estimating a price on each of a thousand hats, all made from the same material and from the same pattern. The Nelson Form for Choosing Bidders and Awarding Contracts has, therefore, been suggested to meet special conditions; to more justly distribute the cost of competition and estimating, and to make each project bear its own proportion of the cost."

Mr. Nelson's system is based on the plan of requiring a prospective builder, who invites contractors to submit estimates of costs, to pay each a fee, which, it is suggested, should be based on the total amount of the estimate. By this plan, Mr. Nelson says, the buyer would get just as much fair competition as he wishes to pay a reasonable price for. He can have five or fifteen or any number of contractors submit estimates, if he desires. This relieves him of responsibility to any of them. He has bought the estimates and



MURPHY & DANA
ARCHITECTS

331 MADISON AVENUE NEW YORK CITY

HENRY KILLAM MURPHY
RICHARD HENRY DANA, JR.

W. L. SOMERVILLE
H. J. MCGILL
J. D. FORSYTH

TELEPHONE—MURRAY HILL—5860
CABLE ADDRESS—MURDAN

April 7, 1919.

RE LOUIS INSTITUTE.

Devoe & Reynolds,
101 Fulton Street,
New York City.

Gentlemen:-

We are very much pleased with the results of your "Velour" paint that we used several years ago on the buildings of the Louis Institute at Windsor, Connecticut. As you can realize, buildings in a Boys' Boarding School of this sort, especially the Dormitories, have very rough usage; but in spite of that, the "Velour" paint has held out very well, so it can be so easily washed down. We are also very much pleased with the flat water-color effect and the soft tones that this "Velour" gives.

Very truly yours,

Murphy & Dana



DEVOE

The oldest paint manufacturing concern in the United States
Founded in New York in 1754

DEVOE & RAYNOLDS CO., Inc.
New York Chicago

paid for them, and can accept any one of them, or reject them all without detriment to the contractors. This also gives him an opportunity to choose the contractors he wants to deal with.

The benefit to contractors, Mr. Nelson holds, is that it reduces the "gamble" to a minimum.

In its report to the association, the Committee on Methods discusses at length a plan that has been used in a number of cities: This is the so-called "Kelley Plan." Of it the report says, in part:

"The plan derives its name from J. J. Kelley, president and chief stockholder of the 'National Contractors' Association.' The chief elements of the plan are briefly as follows: A definite schedule of charges for estimating the cost of projects valued at from \$2,000 to \$1,000,000 or over has been established by Mr. Kelley. A contractor, party to the plan, submitting an estimate on a job, adds to his original estimate a sum equal to as many times the cost of estimating that job, as indicated by the schedule, as there are contractors party to the plan bidding on the job. Ordinarily, however, no contractor adds this amount to his bid unless all contractors bidding agree to do so. After the contract has been awarded and the job has progressed to a reasonable stage of completion, the successful contractor pays the total amount which he has added to his estimate to the local agent of the 'Association.' The agent divides that amount equally among the bidders, except 15 per cent, half of which goes to the local agent and half to the 'Association' as commissions. Contractors, party to the plan, must be 'members' of the national 'Association.' Membership dues were originally \$10 for life; recently it has been announced that membership is free to any contractor, general contractor or sub-contractor, who will agree to adopt the schedule announced by the 'Association,' add the proper amount to each estimate to which the plan is applied, and 'divide up' with the unsuccessful bidders if he is awarded the contract.

"For example: Ten contractors, members of the 'Association,' are bidding on a project approximating \$75,000 to build. The average cost of estimating such a job has been set at \$125. Each of the ten bidders then estimates the job in his own way and adds \$1,250 to his bid or ten times \$125. After the contract has been awarded and the job has progressed to a reasonable stage of completion, the successful bidder pays \$1,250 to the local agent of the 'Association.' The agent gives each of the ten bidders \$106.25, keeps \$93.75 himself, and pays \$93.75 to Mr. Kelley, of the national 'Association.' * * *

"In favor of the Kelley system are urged most of the arguments advanced in favor of any plan providing payment for estimating, especially that the owner thereby pays for estimates on his job only, that he can have just as many estimates as he is willing to pay for, and that the contractor thereby gets a fair fee for his professional services. In contrast to the Nelson Form it has been urged by Mr. Kelley that

his system encourages competition which tends to reduce ultimate building costs 10 per cent. An investigation of the operation of the system in one city in the middle west brought out the information that whereas formerly five contractors was the average bidding on work, since the Kelley system has been adopted, the average is nearer twenty.

A Fundamental Weakness in the Kelley System

"On the other hand, this very fact is urged against this particular system, and it is further stated that it encourages unscrupulous and irresponsible men to enter the field with the purpose of receiving sufficient bidding money to make a considerable profit on estimating without really contracting at all. Various elements in the Kelley system make this appear inevitable.

"First, the contractor's fee for estimating is part of his bid on the job, which he controls and pays himself, rather than a separate fee paid by the owners for his services in estimating. This makes it possible for contractors to agree among themselves without the consent of the owner or the architect, to add to their bids a sum equal to the cost of estimating. So long as this is possible, there is bound to exist a tendency to do so secretly and to 'let in' on the job as many as are desired or 'the traffic will bear.' With this possible, there is nothing to prevent an unscrupulous contractor from making a rough guess, high enough to insure his bid being rejected, add on the cost of estimating, and receive a share in the payment for estimating. It is no case to state that the system is designed to be operated in co-operation with the architect and with the full approval of the owner, who would eliminate such a possibility; for despite the good intentions of the originator and the honesty of most contractors, the actual facts show that the system falls down seriously at just this point.

"Investigation in cities where the Kelley system is in operation shows that while the number of bidders increases on some jobs because the architect is willing to pay for estimates, frequently it increases because he is unaware that he is being charged for the bids. A local agent in one city recently stated that the system did not work on a particular job where the owner took bids directly, as the contractors then had no means of finding out who was bidding in order to line everybody up, and apparently did not care to inform the owner of the plan. In another instance where two of the announced bidders on a public contract failed to submit bids, their share of the total cost of estimating, instead of being returned to the state, was divided among the remaining bidders, showing clearly that the charge for estimating was being made without the knowledge of the engineer in charge, or else in collusion with him to the detriment of the state. Where such secrecy is possible, excessive bidding by irresponsible contractors is also possible, and the whole system is thus brought into disrepute. This is the fundamental weakness of the Kelley system.



GF PEDS



Cut Grounding Costs With PEDS and Get a Better Job.

GF PEDS are "spot grounds" for attaching wood or metal trim to walls, and sleepers to concrete floors, supplanting old-fashioned methods that are costly in time, labor and material.

Many contractors do not keep track of what it costs them to do their grounding. But they are coming to realize that hand-made grounding requires a needless amount of high-priced, skilled labor.

PEDS go on walls in two motions—plaster the PED, and stick it to the wall. (PEDS adhere tightly to *all* walls, metal lath, brick, concrete, gypsum block or hollow tile.) These two motions *save many hours of labor.*

Consider the old method of grounding—seven operations—sawing plugs, shaping them, digging out mortar joints, driving plugs, sawing them off, nailing on continuous strip and wedging the strip to a straight edge. These seven motions *use up* many hours of labor. PEDS are cheaper.

The setting of PEDS is standardized and equally simple on all surfaces. And the low cost of setting PEDS is well established.

Where grounding by the old method (at best a makeshift) costs from 5 to 10 cents per lineal foot, PEDS will do the same work for about 2 cents a foot and often for less. And they make a much better, more secure and more workman-like job.

Wall PEDS afford a firm foundation for attaching plumbing fixtures, hand rails, telephone boxes, electrical fixtures and for putting up composition wall or plaster-board over masonry walls.

Floor PEDS do away with anchoring screeds or sleepers to the floor, bracing from above, wedging and shimming.

HOW PEDS ARE PACKED

PEDS are packed in cartons of 1000. Wall PEDS are packed 900 of $\frac{3}{8}$ inch thickness and in a separate package in every carton, fifty $\frac{3}{4}$ inch and fifty $\frac{1}{2}$ inch PEDS to take care of high and low spots in the wall.

Floor PEDS are packed 900 of $\frac{3}{4}$ inch thickness, with one hundred $\frac{3}{8}$ inch PEDS in a separate package in each carton. Full directions and a wooden paddle for plaster are included.

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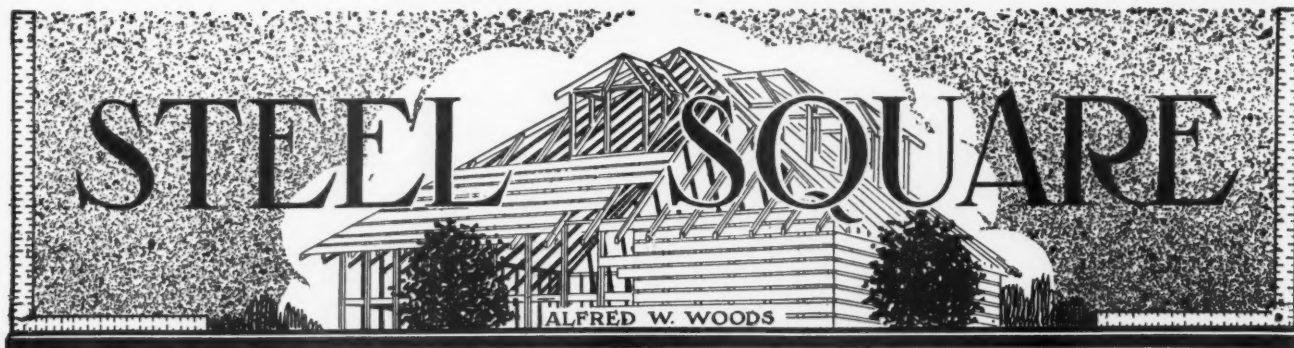
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Possibilities of the Steel Square

SHOWING HOW TO FORM A BRACE TO REST AT ANY POSITION FROM A POST—RELATIVE TREATMENT OF BRACE AND HIP

By A. W. WOODS

TO cut a brace with the aid of the steel square to fit against the side of a vertical post or wall is a very simple matter; but suppose the brace is set off to one side so as to intersect the post or wall at an oblique angle, then that presents a different problem and one that will tax the ingenuity of most men to know just how to place the square to get the required length and cuts for the brace.

In the case of the straight brace is requires but one placing of the square to get the cut across the side of the brace and the proportion to use on the square is the run and rise given the brace, which is just the same as for common rafter; that is, while one arm of the square gives the angle for the seat cut, the other arm will give the angle for the plumb cut to fit against the post or wall; and the distance between the figures taken from one arm to the other will represent by scale the required length of the brace.

But when the brace is set obliquely to the post it is not so simple as additional calculations must be made before a correct solution can be arrived at, as will be seen by referring to the illustration. In this case AC represents the run of the brace and AB its rise; but in order to arrive at the former it is necessary to take into consideration what the run of the corresponding straight brace would be as AD and from this line at right angle set off the amount that is desired for the foot of the brace as at DC .

Then AC taken on one arm of the square and AB

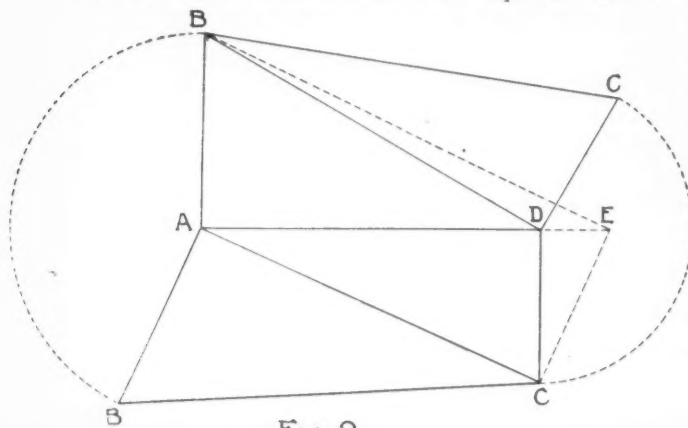


Fig. 2. Layout of Angles in Brace Cutting Problem.

on the other will give the respective seat and plumb cuts for the brace, but there is still another cut to get and is the real sticker in the case. This requires some more planning and to get it we must once more go off into the seemingly unseen proportions, so here we go off at right angle from AC to E , which is on a line with the side of the post. Now, then, CE taken on one arm of the square and CB on the other will

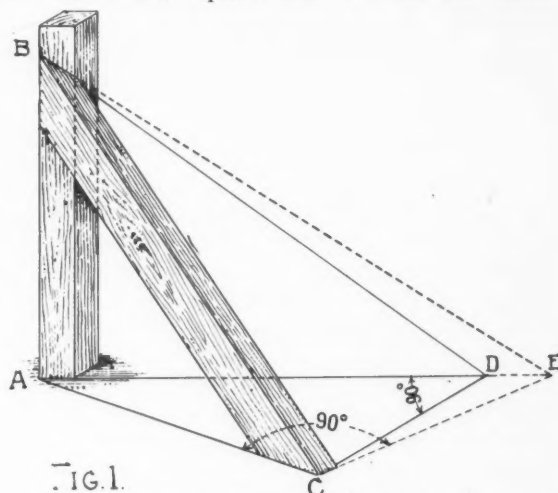


Fig. 1. How to Cut a Brace.

give the required top cut of the brace to fit against the side of the post, the side on which the latter is taken will give the cut.

In case of the straight brace set square out from the post only one triangle is required to obtain the cuts; but in case of the brace set off to one side is it necessary to use this angle as a starting point to form the other angles required, of which there are four; in arriving at the proper angle for the top cut of the brace, which is found in the angle bounded by BCE , the side of the square on which BC is taken will give the cut.

Of course in actual practice it is not necessary to lay out all of these angles to arrive at what is wanted, but it is necessary that their relation to one another should be understood in order to readily solve problems of this kind.

In Fig. 2 is shown the layout of these angles and by making a half fold on the lines AC , AD and BD

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we will have a perfect model in the solid of all the parts that enter into the problem. Like letters are used in both illustrations for like parts and by a comparison of the two we trust one will have no trouble in understanding the relative position of one to the other.

To some this may seem like a nonsensical problem and not likely to ever come up in actual practice, but if the reader will stop to think a minute he will discover that the brace we have been talking about is the same as for a hip in a roof of unequal pitch.

If AD and ED were of the same length then the brace would be the same as for a hip in an equal pitched roof and should be treated as such. This seems simple enough, but how many are there that would think of associating the brace in connection with the treatment of a hip?



Sharpening Your Tools and Keeping Them Sharp

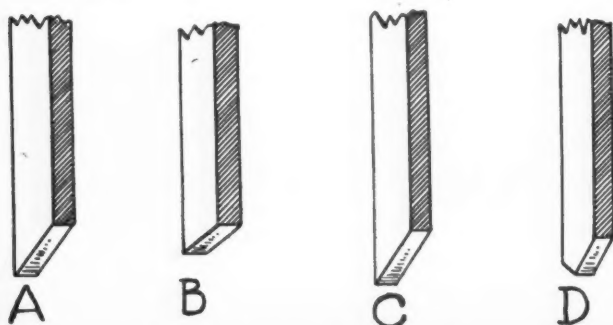
By F. H. SWEET

IT is not enough to have good tools and the skill to use them; they must be sharp. And because good tools may all too easily be made poor ones by bad sharpening, it is well to learn the proper methods. Like their use, there is a right and wrong way to care for them. Grindstones should not be used when the oilstone will do. If it is merely the extreme edge of the tool which is not sharp, a few patient minutes on the oilstone will probably restore it. It is only the nicked blade, the uneven blade, or the blade so dull that the edge is rounded which needs the swifter cutting of the revolving stone.

Remember that each has its own particular kind of edge and bevel. A chisel, for instance, has a bevel of about thirty degrees; a penknife may have one which is two or three degrees only; the shape of a hatchet edge is different from either. Therefore, in grinding any edged tool, try to get exactly the bevel which it had when it came from the tool-maker.

The Proper Bevel of Chisels

Thus A shows a chisel normally beveled, and B a chisel with a much blunter bevel. The chisel C shows most of the bevel of A and just a little of B. Yet while C would do better than B as a wedge to split wood, it is really no sharper than B.



Different Bevels on Chisel Blades.

To sharpen a chisel or a gouge or a plane-bit on a grindstone, a device is made called a tool-holder, which holds the bit or chisel at the proper angle on the stone. If you have not such a holder, dismount the tool and take the bit alone and rest its idle end upon some support close to the stone, so that it leans against it at the proper angle. Return it to this same spot after every examination during grinding, and you will produce the proper bevel with little difficulty.

With any grindstone use plenty of water. With an emery-wheel, be very careful; cut but little at a time, and keep your hand on the blade near its point of contact with the wheel, and do not let it get hot, or the temper will go and your tool will be ruined.

In spite of the fact that water on the grindstone will spatter on you if the stone is turned toward you, and some sort of protection is necessary for your clothes, having it revolve in this way is productive of a better edge than when it turns away from you, for all such fine edges as chisels and plane-bits. The steel is ground back on the blade and not torn away from it, so that the resulting edge is less likely to be ragged than it would be if the wheel were turned away from you. For axes, hatchets, and such tools as the scythe, it makes no difference.

Having a sharp, clean bevel on a bit, chisel or gouge, finish the job on the oilstone. Never put the *flat* side of chisel or plane-bit to the grindstone, and only on the oilstone with the flat of the blade flat on the stone. Chisels and plane bits need one perfectly flat side; to sharpen them with a double bevel, as in D, is to ruin them for good work.

Pattern-makers frequently use an "inside ground" gouge. The ordinary gouge, however, is ground and honed only on the convex side, but any "burr" of steel remaining on the concave side can be removed with a slipstone—a little wedge-shaped oilstone with rounded edges, designed for such hand-work.

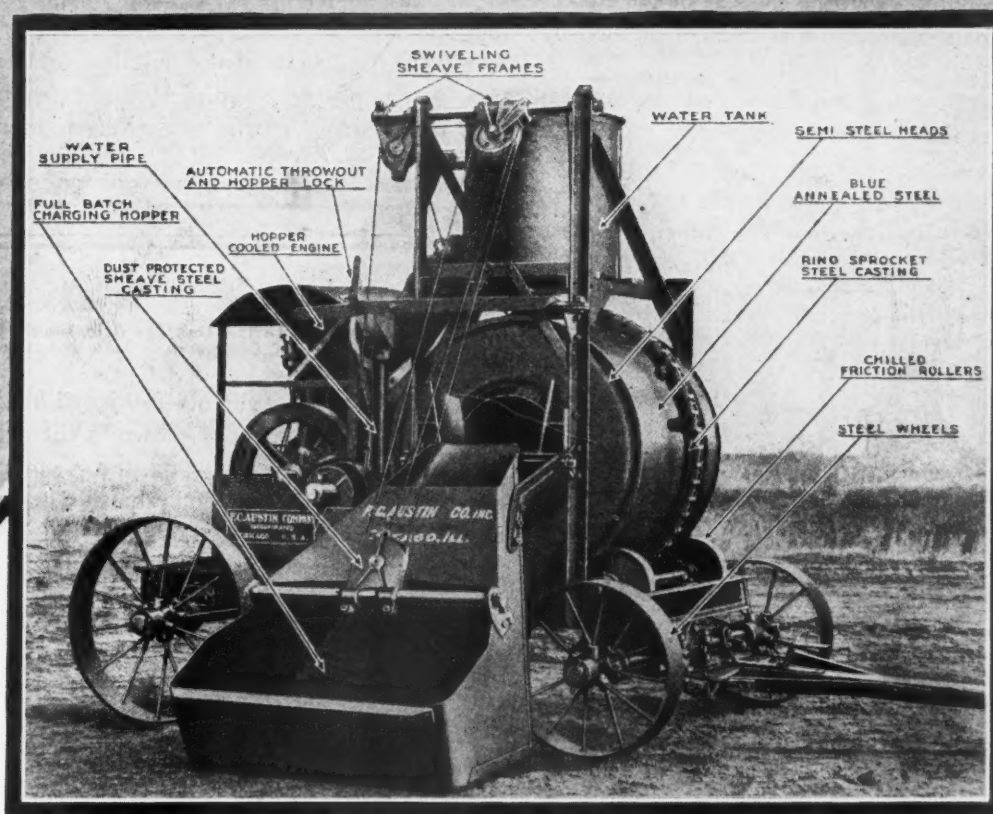
The Use of a Slipstone

It is also necessary to use a slipstone for sharpening bits of fancy planes, moulding-planes, beading-planes, and other cutting edges which have odd shapes or corners. A slipstone is also the best means of sharpening a draw knife—the knife being clamped in a vise and the stone rubbed on the blade—and in sharpening the cutters of bits for boring holes; these, like the edge of the chisel, must be sharpened only on the bevel; otherwise the bit will not bore true.

Hatchets, axes and other heavy-edged tools hardly need an oilstone finish; the whetstone—often used in sharpening scythes and sickles—can be used to smooth the edge.

In putting any tool on an oilstone, use enough oil to make it rub easily, but do not drench the stone. Rub with a circular motion, and do not rub too hard. It is patience and motion, not pressure and oil, which do the work.

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How to Save from \$200 to \$300 in Building a Modern Home

MODERN CLOSET EQUIPMENT ALLOWS SMALLER HOUSE DIMENSIONS WITHOUT SACRIFICING CAPACITIES FOR THE STORAGE OF CLOTHES.

METHODS of saving space in homes, apartments or other inhabitable buildings without sacrificing the comforts and conveniences mean the saving of dollars to home builders. Space-saving beds solved one phase of the problem of reducing the cost of building. Cutting the size of the closets without reducing their capacities is another method by which the home builder can profit.

One of the features of the home that the women members of the family are exceptionally particular

about is the closets. Closets to women are more important even than a big, airy living room to a man. For it is in the closets that women store their clothes, as well as those of other members of the family. Plenty of closets are what they want, and are usually what they get before they put their final



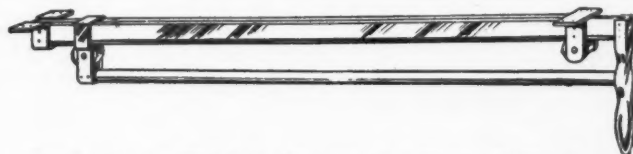
Showing Where and How Easily the Closet Equipment Is Put Into Place.

o.k. on the home design.

An inventive genius has designed closet and wardrobe equipment that now gives the home owner and housekeeper closets that are considerably smaller than the old-fashioned kind and at the same time will accommodate as many garments and keep them in better condition. And by using this equipment in the closets several feet of space can be lopped off the size of the building, which means a saving of from \$200 to \$300 in its cost.

The accompanying floor plans show a home in which this idea has been worked out. The plan at the bottom

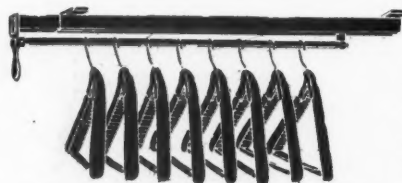
of the first column shows how the ordinary sort of closets are designed, and the space they require to give the family plenty of clothes storage room. The plan at the bottom of the second column shows the same interior, except that the closets are dimensioned to take the modern closet equipment. It will be noted that the modern closet permits a reduction of seven feet from the length of the building, and, at the same time, when properly equipped these closets will take care of as many garments and keep them in much



The Carrier on Which the Hangers Are Hung. It Moves on a Track, and Brings the Clothes Out Into the Room With But Little Effort.

better condition than the old-fashioned kind.

The closet equipment is shown in the smaller drawings. The drawing showing the woman illustrates where and how the telescopic hanger device is put in, and the other drawings show the equipment and the hangers that are attached to it. The clothes are placed

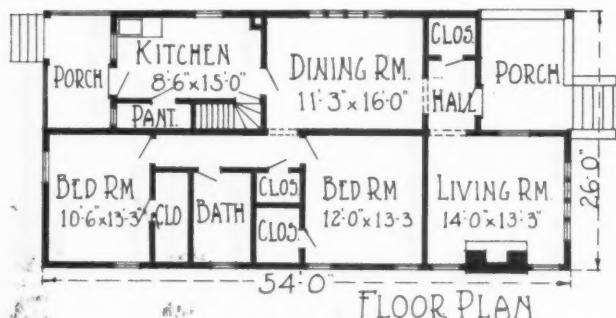


A Series of Hangers Hung to the Carrier. They Keep the Clothes in Much Better Condition than When the Garments are Hung on Hooks.

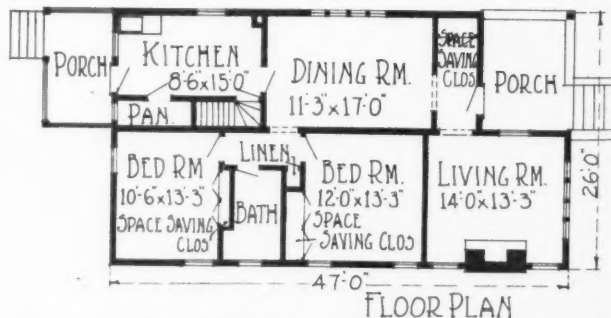
on the hangers and the carrier is moved with a slight pressure, bringing the garments out of the closet or putting them away. Instead of reaching into a dark closet and tak-

ing the garments from hooks arranged along the walls, the clothes are brought out into the light. It is as tho the closet was turned inside out and all its contents brought to view.

Space saving is dollar saving. But while dollars have been saved there is no loss in the efficiency of the home; in fact, there is an increase, when the closets are properly supplied with modern equipment, such as that shown.



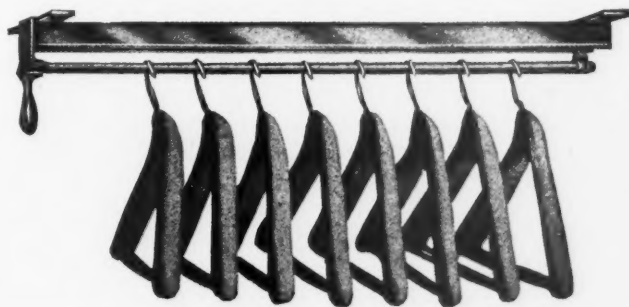
Floor Plan, Showing the Space that Is Wasted by the Old-Fashioned Closets. Note that this Plan Calls for a Building 54 Feet Long.



Floor Plan of the Home the Architect Has Planned with the Closets to Be Equipped with Modern Clothes Hangers. Seven Feet Are Saved in the Length of the Building, Which Means that the Home Will Cost Several Hundred Dollars Less.

NUWAY GARMENT CARRIERS

For All Depths of Closets in New and Old Buildings



THE fact that all types of NUWAY Garment carriers are kept in stock ready for instant shipment to you in practically all sizes, from 12 to 60 inches in length, enables builders to fill their needs for this PERFECT GARMENT CARRIER HARDWARE ON ALMOST A MOMENT'S NOTICE.



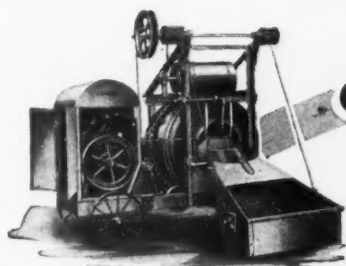
NUWAY Garment Carriers, as you will recall, are the famous garment carrier hardware with the traveling steel slide and ball bearing roller. A touch of the finger will move a full load of garments to and from the closet *noiselessly and smoothly*. All NUWAY Carriers will fit *old closets* equally as well as *closets especially designed* for NUWAY equipment; and new buildings planned to take NUWAY equipment require only 33 1/3 per cent of the closet space necessary for the same amount of garment capacity found in the old fashioned space wasting kind.

NUWAY Garment Hangers are usually installed along with NUWAY Garment Carriers because they are of shoulder shaped design which preserves the natural shapeliness of garments.

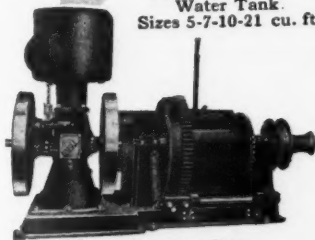
NUWAY Garment Carrier Equipment is the recognized standard for Garment Carrier Hardware.

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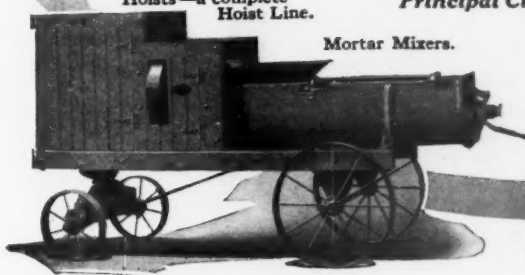
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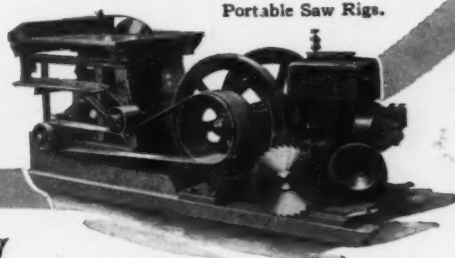
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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Modern Concrete Construction Methods

METAL FORMS ARE REPLACING OLD-TIME PRACTICE OF BUILDING WOODEN FORMS

THE waste of labor and materials in the construction of forms for concrete buildings has brought about new methods in building. Instead of building the forms of wood, standardized metal forms are being used, and have been proven a success and an economical method of putting up buildings of poured concrete.

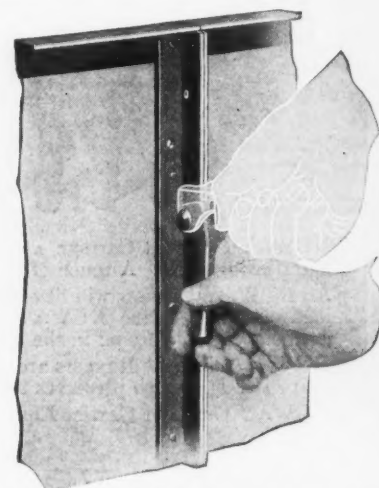
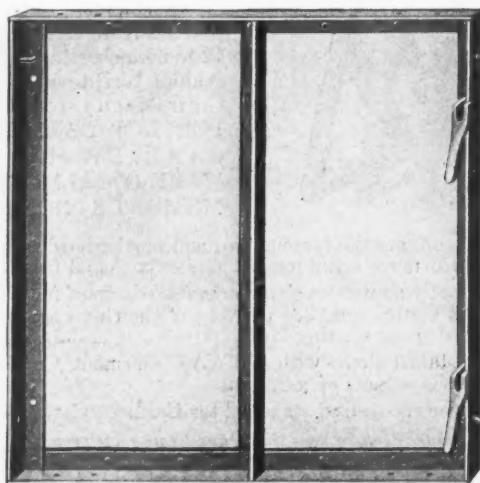
Standard building practice has shown that approximately three board feet of lumber are required for forms for each square foot of concrete surface put in place. Shoring, props and braces consume a large part of the lumber, while the balance goes into the forms proper. Skilled carpenters are required to build the forms, which are torn down after the concrete has set, and a considerable proportion of the lumber is destroyed.

With these facts in mind, a number of concrete builders have devised metal forms in standard sizes which are set up, and the concrete poured, and after the work is finished are removed and used on another job. One type of these forms is shown in an accompanying illustration, while the second picture shows a building during the course of erection, with a part of the walls finished and the forms in place for further work.

The individual units of these metal forms are simple in construction. Each one locks firmly to adjoining

units by an operation that can be performed by common labor. Each unit has attached to it two clamps, which are operated as shown in the illustration, by a single movement of the hand and lock the forms together.

Standard metal units are 24 by 24 inches in size and are made of 16-gauge sheet metal. This sheet is stiffened and held in place by a frame of 1 by 1-inch angle iron around the edges and an angle iron brace



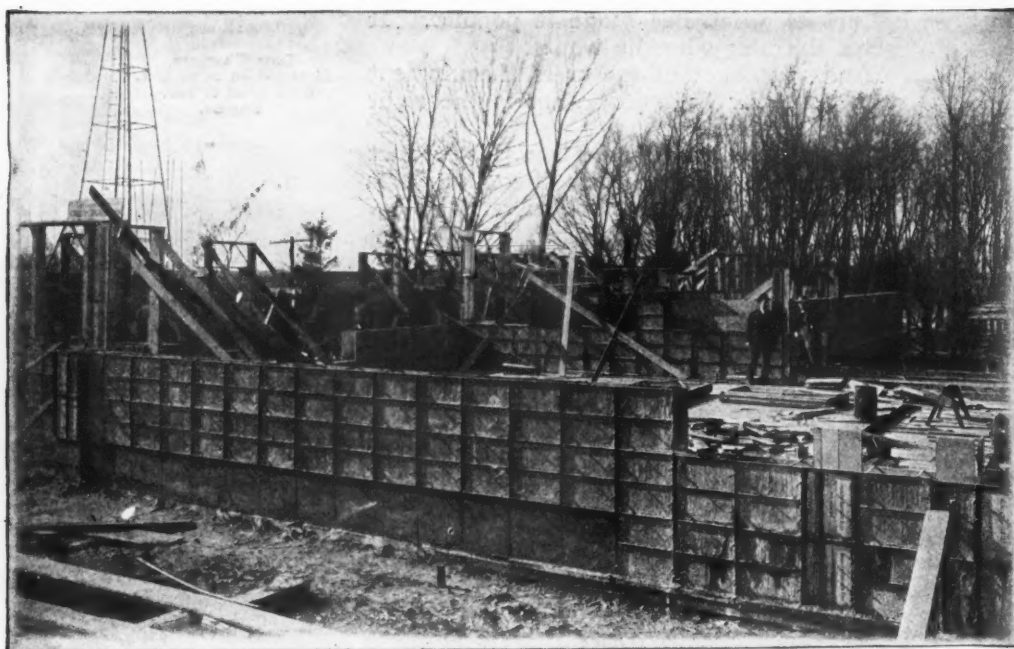
Metal Form for Poured Concrete Construction and the Clamp That Holds Them Rigidly in Place. The Phantom Hand Shows the Method of Operating the Clamps.

across the center. In the rim of the frame are set dowel pins which align the forms, while the clamps hold them in place.

Forms that are shaped and dimensioned for every part of the walls are made of this same material and fitted so that they may be locked, one to another. There are inside and outside angle connections; and hinged connections with which any angle desired may be obtained.

Not more than three courses of these metal forms are needed to do continuous pouring all around. The amount of equipment needed is small. After the first course is poured, the second course, which is an exact duplicate of the first is set on top of it and filled. A third course then is set up and filled in a similar manner.

Speed, good work and economy are the strong points of building with metal forms.



Poured Concrete Building for Which Metal Forms Were Used, Showing the Forms in Place. Builders Assert These Forms Make a Great Saving in Lumber and Carpenter Labor.



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Thousands of progressive carpenter-contractors are now seriously taking up permanent, fire-resistive construction, which is bringing brick and hollow tile into very favorable competition with lumber—many of these contractors are actually finding that such construction costs no more than good frame construction.

If you are interested in giving your trade better homes—more permanent, fire-resistive homes—our literature will be of much value to you—the coupon below will bring it.



The Permanent Buildings Society, Chamber of Commerce, Chicago, Ill.

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NEWS OF THE FIELD

Lakewood Engineering Co. Advertises by Aeroplane

August 15, Frank A. Mitchell, general purchasing agent of the Lakewood Engineering Co., Cleveland, flew with Lieut. George M. Comey, late of the air service of the American Expeditionary Force, in a Curtis biplane over a section of Ohio in the neighborhood of Cleveland and distributed Lakewood advertising literature at various points. Among the circulars distributed was the Lakewood Aerial Bulletin, which described the trip, and contained picture of the company's products. This novel advertising project aroused a great amount of interest in the various cities visited, and gave the Lakewood company much valuable publicity.



Wall Board Men Form New Company to Produce "Niagara Wall Board"

There is to be a new wall board on the market this fall, to be known as Niagara Wall Board, as the result of the formation of the Niagara Wall Board Co., at Buffalo, N. Y., by a group of men who have grown up with the wall board industry.

The president of the new company is J. B. O'Brien, who was assistant to the president of the Beaver Board companies and general manager of the Beaver Board Timber Co. Mr. O'Brien was with the Beaver Board Co. since its organization in 1906. The production of Niagara Wall Board will be under Mr. O'Brien's direction.

C. C. Hullinger, who was general manager of the Black Rock Wall Board Co., one of the associated Beaver Board companies, is secretary and treasurer of the Niagara company, and will be in charge of sales and advertising. Previous to the formation of the Black Rock company, which was placed under Mr. Hullinger's management, he was general branch manager of the Beaver Board companies and is well known to lumber dealers and jobbers thruout the country.

The general offices of the Niagara company are in Buffalo, N. Y. The production activities are centered at Penn Yan, N. Y., where the fibre mill of the Moore Paper Corporation has been acquired, together with an adjoining finishing plant, both of which are alongside the same railroad. Penn Yan possesses excellent water power, which will be utilized by both mills, and splendid shipping facilities.

The operation of the fibre mill is under the superintendence of Frank Farrell, who was superintendent of the Tonawanda Board & Paper Co. for eight years and has had more than thirty years' experience in pulp and board production. J. Woods Campbell, who was the master mechanic of the Beaver Board companies, and has devoted his lifework to mill operation, is superintendent of the finishing plant.

Previous to the formation of the Niagara company, the organizers explain that considerable research work was undertaken to develop a type of board that would have certain advantages. As the result of considerable experimentation and discovery, the Niagara officials state that they have perfected in Niagara Board a product that possesses great



Metal Lath Week

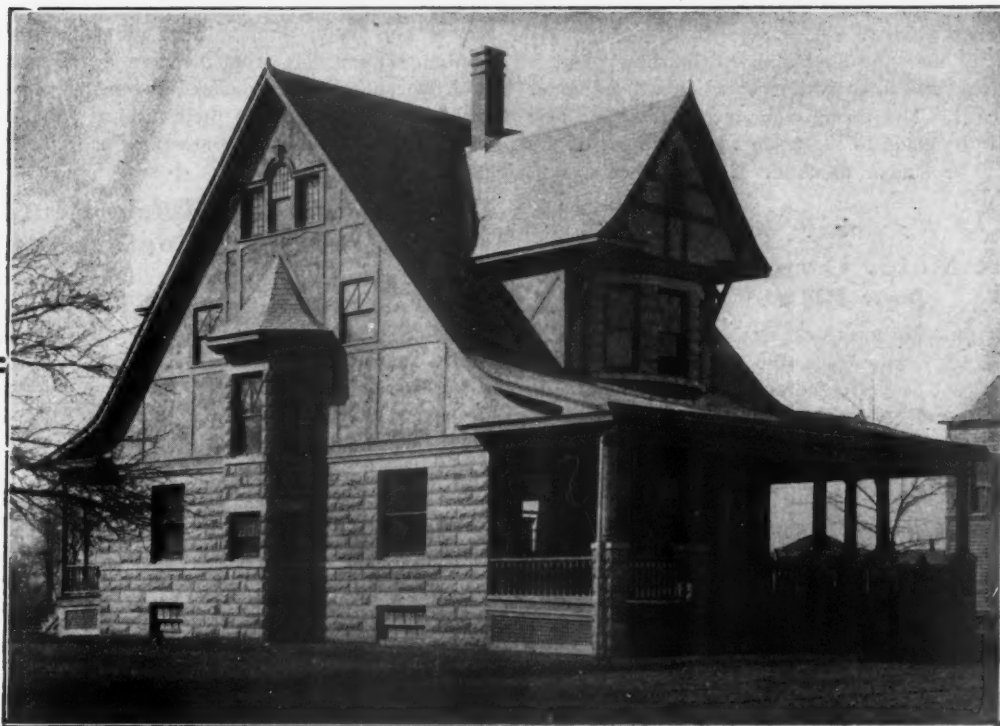
October 6th to 11th

Co-operate with the National Fire Protection Association and help Fire Prevention Week, October 6th to 11th. For this purpose the Metal Lath Man-

ufacturer's Association will conduct Metal Lath Week, October 6th to 11th, to help center public attention on Fire Prevention.

Your influence is needed. Urge the construction of fire-safe homes and public buildings. Write us for pamphlets and data.

THE BOSTWICK STEEL LATH CO., Niles, Ohio



Residence at Sandusky, Ohio. Medusa Cement Stucco and Concrete Blocks.

Medusa Waterproofing Will Keep It Damp-Proof

When you contract to build a house of concrete blocks you want to be sure that the finished structure is going to be damp-proof. You want it to be stainproof and you want to know that the block will hold up against rain, sleet and sun.

There's just one way to be sure of your work—make the concrete blocks watertight. Mix



GET THIS FREE BOOK

"How to Make Concrete Waterproof" is a booklet that explains the theory of waterproofing concrete. It is full of practical information that will help you to bigger profits. Write for it—NOW.

with the sand, cement and gravel when the concrete is made. This waterproofing gets into the innermost pores, sealing them with a film that water cannot penetrate. Water can't attack such block. They will always remain watertight and damp-proof; they will not become stained or streaky.

Medusa Waterproofing is the original *integral* waterproofing for all cement, stucco and concrete work. It does the work as mere surface coatings cannot possibly do it. And it makes a stronger, harder, *better* concrete. Medusa Waterproofing comes in both paste and powder form, ready for mixing with any white or gray portland cement.

There is no substitute for Medusa Waterproofing

The Sandusky Cement Company

Department C, Cleveland, Ohio

Also Manufacturers of Medusa White and Medusa Gray Portland Cement—Plain and Waterproofed

MEDUSA WATERPROOFING

hardness and higher rigidity.

The equipment of both the fibre mill and finishing plant is practically completed and large scale production will be under way by November 1. The formal announcement of the new board will shortly be made to the trade when samples of the new product will be mailed to about 22,000 lumber dealers thruout the country.



Stewart Motor Corp. to Occupy New Plant

At the regular monthly meeting of the board of directors of the Stewart Motor Corporation, Buffalo, N. Y., a quarterly dividend of 2 per cent on preferred and 2½ per cent on common stock was passed. June and July were two of the biggest months in the company's history.

The growth of the Stewart Motor Corporation has been almost phenomenal. From a small beginning in 1912 to its present position near the top of the list of exclusive truck manufacturers, is a record of which the company is proud. Within the next 30 days the company will move into its modern new plant which covers nine acres of land and which will materially increase the production of Stewarts. The present factory will be operated in conjunction with the new plant.



W. J. Clucas goes to Detroit

Frank N. Adgate, western sales manager of the Lancaster Steel Products Co., of Lancaster, Pa., has appointed W. J. Clucas manager of their new Detroit sales office. This step was made necessary by the increased demand for the company's products in and about Detroit and the opening of the new office will enable them to broaden the scope of their

service and better supply the trade. Mr. Clucas comes to the Lancaster people from the Standard Parts Co., of Cleveland, where he was associated for many years. To further facilitate the handling of their products, the Lancaster company will also establish a warehouse in Detroit.



H. W. Benkart Is Buffalo Representative of Lakewood Engineering Co.

The Lakewood Engineering Company announces the appointment of Harry W. Benkart as its representative in Buffalo, N. Y., with offices in the Ellicott Square Building.

Mr. Benkart will devote his efforts to the general construction field. He has had about ten years' experience in the construction business, the greater portion of which time he spent as superintendent of construction for the Dravo Construction Company.

For the last five years he has had an agency for contractors' equipment in Buffalo, including the Lakewood line. He has now discontinued the other lines and has joined the Lakewood organization as a member of the sales department.



Henry Disston & Sons Plant Surrounded by Beautiful Trees

It is strikingly fitting that the largest concern in the world manufacturing saws should have in mind, as many as twenty-three years ago, one of the most popular and important topics of the present day—Reforestation. The accompanying picture shows a very fine avenue of hardy Norway maples on both sides of the long approach to the 50-acre factory of Henry Disston & Sons, Inc., Philadelphia.

One of Disston's long-time employes, when viewing this photograph, remarked: "Well do I remember the old walk,



THE IDEAL PLASTERING BASE

FOR
EXTERIOR
AND
INTERIOR

NOW Is the Time

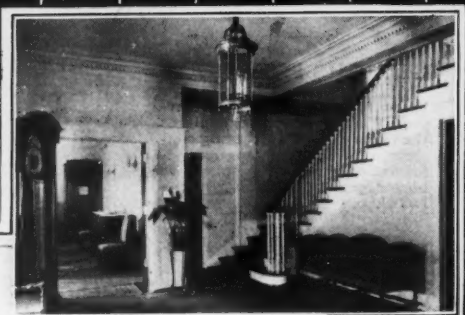
THE building field is extremely active. This means the buying of vast quantities of lath for exterior and interior plastering.

NOW IS THE TIME to become fully acquainted with E-COD FABRIC. It will provide a WEATHER-PROOF, WATER-PROOF, RUST-PROOF, plastering base for exterior stucco. It will produce SOUND-DEADENING AND FIRE-RESISTING qualities for interior plastering.

Figure on E-COD FABRIC for low price and durability, exterior or interior use.

Do It Now!

MacADAMS & CALL
1731 Conway Building CHICAGO, ILL.





ELECTRIC-LIGHTING the FARMS of the U.S.A.

DONT LET THIS BIGGEST-OF-ALL-MARKETS SLIP BY YOU

A truly wonderful merchandising opportunity now lies in the Farm Lighting Business.

The farmers of the United States—some 6,000,000 of them—are rapidly adding electric light and power to their equipment.

Time and money saving, plus labor elimination advantages, make sales easy. Personal comfort, family pleasure, and modernized farm life factors force quick purchasing decisions.

And the men who get in now are going to be the big men and reap the profit cream from the sale of Farm Lighting plants, just the same as those who visualized aright the vast potential automobile market in its early days.

Grab the Farm Lighting sales opportunity. Do it now. Don't

wait until the best known lighting and power unit sales franchises have been closed by someone else in your territory.

The Universal is a leader backed by a twenty year production and operating pedigree. It's a standard lighting plant that always makes good and builds up its own demand.

Its immense popularity is due to its universal satisfactory service; its simplicity of mechanical construction and moderate cost.

And a Universal is easier to operate and care for than the electric system on any automobile; its dependability is completely proven by the most rigid of all tests—the test of more than twenty years time.

Why not write us today for our sales proposition and complete detailed specifications of the Universal systems.



UNIVERSAL PRODUCTS Co.

SANDUSKY, Ohio

and four times a day for many years I trod the path along with thousands of fellow-workers. It was of cinders, trodden down, and in the summer this long, wide, deep bed of cinders seemed to absorb the hot rays of the sun and throw them out with redoubled vigor as you walked along. The im-



Shaded Street, Leading to the Disston Plant.

provement is a lasting and beautiful memorial to the thoughtfulness of Samuel Disston, whom all the boys called 'Uncle,' for reaching the shade of the wide-spreading branches of the maple trees one enjoys the cool, delightful stroll along the smooth cement pavement to the entrance of the works."

It is peculiarly interesting and seemingly contrary that Disston, whose saws for years have been used in denuding thousands upon thousands of acres of timber should be planting, growing and preserving our beautiful shade trees.

Coatings That Prevent End Checking

Wood, whether in the form of logs, lumber, timber, shaped blanks, or veneer, will split and check at the ends during seasoning, if drying is allowed to go on at a natural rate thru the end grain. To retard the rate of drying from the ends, it is necessary to cover them with some protective coating.

The law of end coatings, in simple terms, is that the harder and greener the wood, the more effective must be the coating. In its experiments to determine the practicability of various coatings and end dips, the Forest Products Laboratory found the following to be true:

Paint is convenient to handle, but is of low effectiveness.

White lead is convenient to handle, and is of medium effectiveness.

A commercial compound that is convenient to handle, and is of considerable effectiveness.

Rosin-lampblack is inconvenient to handle, but is of high effectiveness.

Rosin-lampblack is made according to the following formula:

Clear grade rosin....60 parts by weight

Lampblack 1 part by weight

The rosin should be melted, but not allowed to boil or froth. The lampblack should then be thoroly stirred in. The ends of the sticks should be dipped in this molten mixture to a distance of about 1/2-inch. When hard, the coating should be smooth, free from bubbles, shiny, and 1/8-inch thick over the end.

If the stock is to be subjected to rough handling, which might cause the coating to chip when cool, linseed oil may be added in the proportion of 1 to 15 by weight, but this will have a tendency to make the coating excessively soft in the kiln at temperatures above 130° F.



THE COMPLETE, HANDY CASE For ARCHITECTS and BUILDERS

Price, \$4.95

Light and Easy to Carry

Containing case and drawing board; Pearwood T square; one 6' 30" triangle; one 4' 45" triangle; 1 Architects or Engineers scale; 1 dozen steel thumb tacks; 4 sheets HERMES Tracing Cloth.

GENERAL CATALOG ON REQUEST

SPAULDING-MOSS CO.

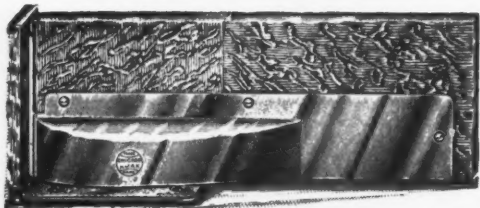
Distributors of HERMES Tracing Cloth

32 Federal Street

Boston, Mass.



TRADE
CHICAGO
MARK
SPRING HINGES



Appearance — Economy — Durability The "AJAX"

In the "Ajax" we offer a Floor Spring Hinge with Ball Bearings at the top of the Hinge, away from dust and moisture.

Alignment Adjustment that is easily accessible.

Roller Bearings for the piston, to overcome friction.

Durability, Economy and Appearance, backed by our REPUTATION.

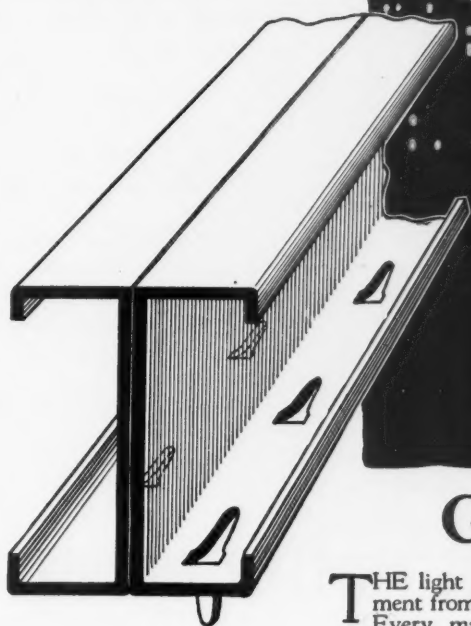
Send for Catalogue C 36.

Chicago Spring Butt Company,

CHICAGO

NEW YORK

A Better Method of Fireproof Construction



GF Steel Lumber

THE light weight, fireproof, indestructible building is the soundest investment from view points of first cost, maintenance and permanent usefulness. Every material consideration favors the use of GF Steel Lumber and Herringbone Rigid Metal Lath as a type of construction.

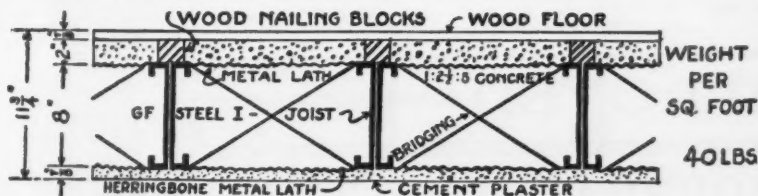
GF Steel Lumber takes the place of wood joists and studs in floor and partition construction. With Herringbone Metal Lath above and below the GF Steel Lumber sections, there is no chance for a ruinous fire, and there is maximum strength and rigidity with the lightest possible weight.

A point worth remembering is that GF Allsteel Lumber sections are very evenly rolled and of uniform thickness over their entire width, without internal stresses. Another point to bear in mind when estimating is that GF Allsteel Lumber sections need not be spliced, as they can be furnished in practically any lengths to suit the job. This is important as it means a saving in time and labor and unquestionably makes a better job.

The use of GF Steel Lumber and Herringbone Rigid Metal Lath guarantees not only a fireproof, soundproof, well finished structure, but it provides a dependable means of economical construction during winter months.

Look carefully into this type of construction—
Send for the GF Steel Lumber Book today.

Typical Floor Construction
with GF Steel Lumber and
Herringbone Rigid Metal Lath



THE GENERAL FIREPROOFING CO.



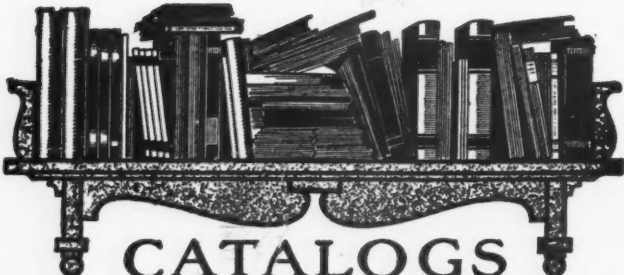
METAL LATH-CONCRETE REINFORCEMENT

WATERPROOFINGS AND TECHNICAL PAINTS

YOUNGSTOWN, OHIO.



NEW YORK - CHICAGO - PHILADELPHIA - UTICA - BUFFALO -
KANSAS-CITY - OMAHA - DALLAS - MINNEAPOLIS - SAN FRANCISCO



CATALOGS BULLETINS & BOOKS RECEIVED

The following literature, dealing with subjects of interest to builders is now being distributed:

Sheet Metal building products and the revised net prices on them are shown in the "Milcor" Confidential Price List, issued September 15 by the Milwaukee Corrugating Co., Milwaukee, Wis. The booklet contains 96 pages and cover, and is devoted to descriptions of the company's products and the new prices. The booklet is well illustrated.

"The Peptimist," a magazine for building supply dealers, is the name selected for the new magazine first issued in August under the title, "Name It," by the Concrete-Cement Age Publishing Co., Detroit. "The Peptimist is the optimist in action," says the editorial announcing the name, and the September issue sustains the description, for it is filled with live, inspirational matter for material dealers.

"Getting Perspective" is the title of a new eight-page garage door hardware circular issued by the National Manufacturing Co., Sterling, Ill. The circular points the way for dealers to sell garage door hardware, and urges that

garage door set models be used, as they are working miniatures of the National hardware.

Evans "Almetl" Fire Doors and Shutters and other products, such as the Star Ventilators, are described in a new 24-page and cover booklet issued by the Merchant & Evans Co., Philadelphia. Included in the booklet are architects' specifications of the doors and shutters, which are designed to make buildings more safe against fire.

Spring Butt Hinges, manufactured by the Bommer Spring Hinge Co., Brooklyn, N. Y., are described and illustrated in an attractive 36-page and cover booklet issued by the company. Many types of spring hinges are shown and the prices given.

Many ways of using trailers attached to automobiles and trucks are shown by the illustrations contained in a folder entitled "Miami Trailers Double the Value of a Truck or Automobile," issued by the Miami Trailer Co., Troy, O. Trailers in use by members of the building industry are featured.

The "Aristo" process of making concrete to resemble marble is described in a four-page folder issued by the Art Stone Co., Waynesboro, Pa. This company instructs concrete manufacturers in the art of making this sort of material.

The "Blaw" system for building construction, which is the erection of concrete by special forms, is described in a four-page circular issued by the Blaw-Knox Co., Pittsburgh, Pa. Floor and roof construction and adjustable circular column molds and heads are shown by the illustrations.

"Standard Improved Sanitary Chemical Inside Closets" is the title of a small six-page folder issued by the Sanitary Manufacturing & Supply Co., Grand Rapids, Mich. The circular describes the closets the company makes, the advantages of this closet, and methods of installations.

Save Your Customer Money and Make A Profit Yourself



The contractor who takes the order for the water system, and installs it when the house goes up, makes an extra profit and at the same time the cost to his client is considerably less than the expense of a later installation.

The Deming Water Supply booklets will prepare you to give this service. Sent free together with details of our special contractor's offer.

Distributors

THE DEMING CO., 99 Depot St., Salem, O.
HENION & HUBBELL, Chicago
HARRIS PUMP & SUPPLY CO., Pittsburgh

Deming WATER SYSTEMS

IMPROVED

MORRILL SPECIAL SAWSET

The anvil has been redesigned so that it will perfectly set any Hand Saw. Any One Can Use It.



CHAS. MORRILL

94 LAFAYETTE ST.
NEW YORK

THE MASTER WOODWORKER



Jointing Underslung rip saw. Overhead cross cut that works like a swing saw.

Ripping Bores, joints, mitres, dados, rabbets, planes, moulds, ribs and joints on a bevel. Quick, accurate adjustments. Sturdily built to last a lifetime.

Two men can easily take machine to any room through 2' 6" doors.

The greatest labor saver on the market.

Catalogue sent on request.

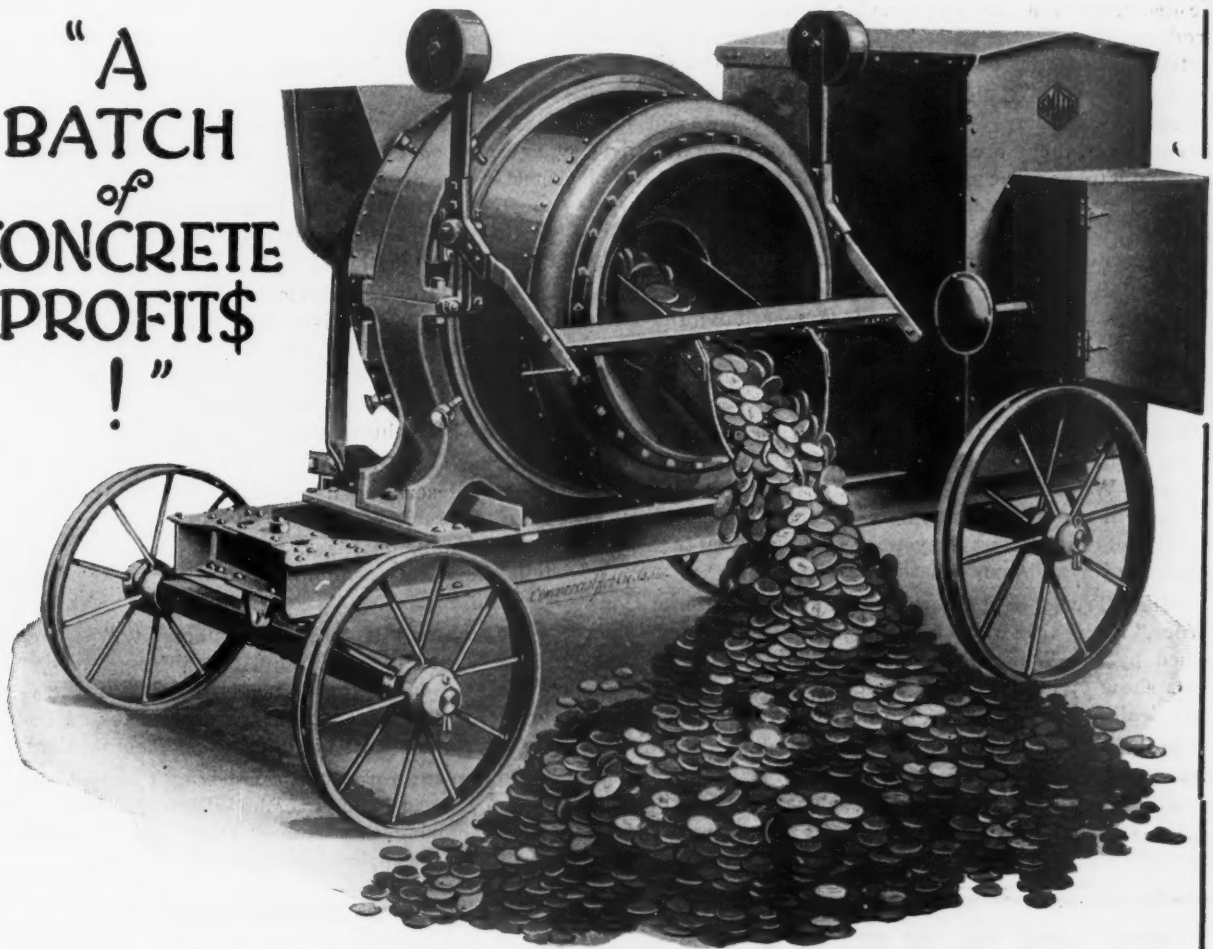
THE WOODWORKER MANUFACTURING CO.

Cor. Brush and Congress Streets

DETROIT, MICHIGAN

\$—A DOLLAR SAVED IS A DOLLAR MADE—A DOLLAR SAVED IS A DOLLAR MADE—\$

"A
BATCH
of
CONCRETE
PROFITS
!"



**This, a veritable MINT, is the popular
SMITH MIXERETTE—**

On Trucks with Gasoline Engine and Power Loader.

The Smith Mixerette is a high quality small capacity mixer, built for small jobs such as silos, culverts, sidewalks, curb and gutter, etc. It is also used extensively by industrial plants who do their own concrete work, and by large contractors for their small jobs and for finishing up their large jobs.

The Smith Mixerette will easily turn out 50 cubic yards of mixed concrete in a day with a small crew. Its capacity per batch is 4 cubic feet of mixed concrete, or 6 cubic feet of loose unmixed material.

Write Today For Descriptive Matter.



The T. L. Smith Company

3187 W. Hadley Street

Milwaukee

Wisconsin



\$—A DOLLAR SAVED IS A DOLLAR MADE—A DOLLAR SAVED IS A DOLLAR MADE—\$

"Sanisep" Portable Sewage Disposal Systems, for industrial villages, schools, rural homes and summer camps are described in a six-page circular issued by the Cement Products Co., Wilmington, N. C. These sewage disposal systems follow the design of those used by the Government in its housing projects.

Concrete buildings for farmers, their value, and how to construct them are the subjects covered in the September-October issue of *The Concrete Builder*, published by the Portland Cement Association, Chicago. Concrete feeding floors, garages, implement sheds, silos, water supply systems, etc., are described and illustrated.

"Bestwall, for Every Building Purpose," is the title of one of the many pieces of literature describing the Best-wall gypsum wallboard, made by the Bestwall Manufacturing Co., Chicago. With the circulars comes a sample of the wallboard.

"Systems Pay," is the caption over the leading article in the September issue of "DooR-Ways," published by the Richards-Wilcox Manufacturing Co., Aurora, Ill. This article will prove of great interest to hardware dealers, as it tells of the successful systems employed in the establishment of a well-known hardware concern.

"White Trucks in the Service of Building Material Companies," is the title of an eight-page, well-illustrated folder issued by the White Co., Cleveland, Ohio. The illustrations show vividly the uses a number of successful materials dealers are making of motor trucks.

"Training Courses in Safety and Hygiene in the Building Trades," is the title of Bulletin No. 31, issued by the Federal Board for Vocational Education, Washington, D. C. The booklet contains 126 pages and cover and deals exhaustively with the subjects. It also is well illustrated.

Auto truck bodies for farmers are described by text and illustration in an eight-page folder issued by the Republic Motor Truck Co., Alma, Mich. The folder shows a number of different kinds of special truck bodies for the use of farmers in hauling their produce about the farm and to market.

"Kahn Pressed Steel Construction," is a twenty-four-page and cover booklet issued by the Trussed Concrete Steel Co., Youngstown, Ohio. The booklet describes Kahn pressed steel joists and studs for floors, roofs, walls and partitions. The illustrations are excellent, as they show construction methods.

"What Oshkosh Service Really Means," is the title of a "broadside" folder issued by the Oshkosh Manufacturing Co., Oshkosh, Wis. The folder describes the new plan of the company to maintain service station for the benefit of the owners of the equipment it makes, and by a map shows where these stations are located.

"Glass and Glazing," is a twenty-four-page and cover booklet describing its products, issued by the Pittsburgh Plate Glass Co., Pittsburgh, Pa. The text deals with various kinds of glass, the methods of manufacture and tells how each should be used. There are numerous illustrations.

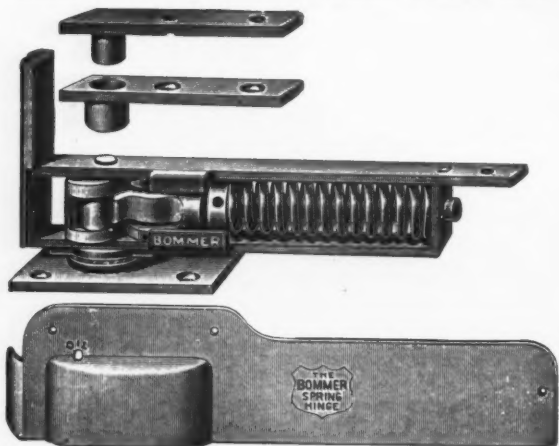
"Workmen's Homes, an Opportunity," is the title of a folder descriptive of industrial housing projects, issued by the General Fireproofing Co., Youngstown, Ohio. The folder contains suggestion for architects and builders, and contains arguments for housing projects that are excellent.

Equipment for factory finishing rooms is shown in a new forty-page and cover booklet issued by the De Vilbiss Manufacturing Co., Toledo, Ohio. The booklet describes the portable painting equipment this company manu-

BOMMER

Floor Surface Spring Hinge

Double or Shingle Action, Holdback, Ball Bearing. Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side

Your Hardware Merchant Can Supply Them

Bommer Spring Hinge Company, Brooklyn, N.Y.



Stained with Cabot's Cresote Stain
C. M. Hart, Architect, Bay Shore, N. Y.

Stained Shingles

The Warmest, Most Artistic and Most Economical of all House Finishes

Wood shingles are two or three times warmer than the gummed paper substitutes, and they are cheaper, last longer and are incomparably more artistic and attractive. When stained with the soft, moss-greens, bungalow-browns, tile-reds and silver-grays of

Cabot's Creosote Stains

they have a richness and beauty of tone that no other finish can equal and the creosote thoroughly preserves the wood. Use them also on siding, boards, sheds and fences. Anyone can apply them with best results at least expense.

Cabot's "Quilt"

makes floors and partitions sound-proof by breaking up the sound-waves and absorbing them. It makes walls and roof cold- and heat-proof by a cushion of minute dead air spaces that prevents the conduction of heat. From 28 to 50 times as efficient as cheap building paper.

You can get Cabot goods all over the country
Write for samples and name of nearest agent.

SAMUEL CABOT, Inc.

Manufacturing Chemists
1133 Broadway, New York 24 W. Kinzie St., Chicago
Cabot's Brick Stains, Stucco Stains, Conserve Wood Preservatives, Damp-proofing, etc.



This mark stands for time saved and labor done that you don't have to do

Since you make your money on the results of your work and not in the labor itself, why should you do work on the job that can be done better and more economically by factory methods? The woodwork that requires the least work on the job is the most profitable for you.

Recommend CURTIS Woodwork to your customers. They can order it from their lumber dealer, and you and the customer, too, can identify it by the trademark, shown above, as it is on the stile of a sash.

Think for a minute what that mark stands for on just sash. It means that the double groove for the sash-cord, shown on the left, is cleanly cut, so that the sash will slide freely over the pulley without adjusting. It means that the tenon of the cross-rail is cut off, so that it does not project into the groove. It means that the bore is deep enough for the knot of the sash-cord, so that you don't need to re-bore. These features will probably save eight or ten minutes' time dressing each sash.

Yet these features about sash are simply typical of the work that is done on all CURTIS Woodwork before it reaches you—work that will save you and your carpenters time and labor on the job.

That's why it is to your interest to recommend CURTIS Woodwork to your customers. Would you like to know more about it? Write to the Curtis Service Bureau, Clinton, Iowa.

CURTIS SERVICE BUREAU

2039-3039 S. Second Street, Clinton, Iowa

Manufacturing and Distributing Plants at

Clinton, Iowa Sioux City, Iowa Minneapolis Wausau, Wis. Dayton, O.
Oklahoma City Lincoln, Neb. Detroit Topeka, Kan. Chicago

EASTERN OFFICES AT PITTSBURGH AND WASHINGTON

The makers of CURTIS Woodwork guarantee complete satisfaction to its users

"We're not satisfied unless you are"

1866 CURTIS WOODWORK

"The Permanent Furniture for Your Home"

factures, and shows how it should be installed in the finishing room.

"Save 30 Per Cent on Your Fuel Bill," is the title of a large size, eight-page folder issued by the Northern Insulating Co., St. Paul, Minn., manufacturer of Flaxlinum. How homes well insulated with flaxlinum will be the most economical to heat is described in the folder.

"A Volume of Evidence," furnished by the owners of Butler furnaces, is the title of a twenty-four-page booklet issued by the F. B. Zieg Manufacturing Co., Fredericktown, Ohio. The booklet is made up of commendatory letters sent the company by users of its furnaces.



Safeguard the Water Supply

INSTANCES of infection from polluted water supplies are happily growing fewer every year, due chiefly to the taking of greater precautions against the spread of contamination and disease. There is still, however, much room for improvement.

The oldest form of water purification is, of course, simple filtration thru filter beds of sand or gravel. In some regions where the watershed is exceptionally free of loose matter and not easily subject to contamination, this is sufficient for the production of good water. In the majority of cases, however, the water contains organism that pass freely thru a sand filter or brings down so much sediment that the proper working of the filter is interfered with so that it is the best practice to supplement filtration with some form of chemical treatment. This is always the case when the watershed is situated in a thickly peopled region easily subject to pollution.

The chemicals most commonly used are alum and chlorine. Alum has the property of rapidly precipitating all suspended and semi-soluble matter in the water. As the suspended

matter has considerable affinity for the organic matter which causes pollution, the use of alum also greatly reduces the number of bacteria in the water. The effectiveness of alum may be judged from the fact that as little as one or two grains is sufficient to precipitate the sediment in most water. The object of the chlorine is to sterilize the water as a further protection against bacteria.

The cost of chemical treatment is so little—hardly a fraction of a cent per gallon of water—that it is not to be considered in connection with a service that affects the health of the community to such an extent that its adequacy is measured in terms of death rate.

To some the use of chemicals in drinking water is, at first, distasteful. It must be realized, however, that fecal matter and the germs of disease present in untreated water are in themselves chemical substances. By chemical treatment we substitute for these deadly organisms the purifying reagents which destroy them.



Easily Told

Indignant Housewife—"I wish you would explain, please, how this piece of motor car tire got into the sausage you sold me yesterday?"

Butcher—"That is nothing strange, madame, since the motor car is everywhere replacing the horse."—Le Pele Mele.



FORTY THOUSAND men, all trained in one profession, is a large advisory board for anyone to have to consult when necessary. Many more men than that read the AMERICAN BUILDER each month, and thru the Correspondence Department they may be consulted about any question concerning building that may arise. When in doubt about a building method, send an inquiry to the Correspondence Department.



Waterproofing Compound

The use of Ceresit Waterproofing Compound gives positive results in permanently waterproofing basements, cisterns, pits, water tanks, tunnels, reservoirs—in fact, every type of construction.

Cement stucco, properly waterproofed with Ceresit, will not hair crack or discolor, and will last years longer than unwaterproofed stucco.

A few pounds of Ceresit in each batch is the simple operation by which waterproofing results are secured. It's economical, easy to use and effective in results.

There are 18 Ceresit Protective Products for building construction. Literature describing these materials will be sent on request, and our 32-page illustrated catalogue will be mailed if you will send your business card or write on your letterhead.

Ceresit Waterproofing Co.

910 Westminster Bldg.

CHICAGO

CERESIT

Protective Products

Ceresit Waterproofing Paste

A waterproofing for basements, pits, cement stucco, etc.

Cem-bric Covering Compound

A waterproof paint for cement and brick exteriors and concrete floors.

Luxstar Industrial Enamel

A pure white paint-enamel for every class of interiors.

Indurite Liquid Hardener

A chemical compound for the protection of concrete floors.

Ceresitol Liquid

A transparent waterproofing for cement, brick and porous stone.

Damp-proof Plaster Bond

Damp-proof Foundation Coating

Hydrolac Acidproofing

Hydrolac Smokestack Paint

Weather-Wear Mixed Paint

Hydrolac Roof Preservative

Hydrolac Asbestos Putty

Mortar Colors

Descriptive price list and literature describing all Ceresit Products sent on request.